

CHRONIC DISEASE IN MINORITY POPULATIONS

African-Americans, American Indians and Alaska Natives,
Asians and Pacific Islanders, Hispanic Americans

1994



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion



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ERRATA

Chronic Disease in Minority Populations

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1. Change the year given in the suggested citation (on the front inside cover) from 1992 to 1994.
2. The Hispanic mortality rates given on pages 5-11 (Table 5.4), 5-12 (Table 5.5), 6-3 (Table 6.2), C-4 (Table C.4), and C-6 (Table C.7) were calculated by assigning individuals classified as *unknown* in the vital statistics data as *Hispanic* for the ethnicity variable. These rates may be considered upper limits. Hispanic mortality rates were also calculated by assigning individuals classified as *unknown* in the vital statistics data as missing for the Hispanic variable. The second estimate could be considered a lower limit. The lower limit estimates are available on request.
3. Appendix F, page F-2, under the header SAMPLE SIZE, add the following sentence at the end of the paragraph. *Upper bound response rate estimates ranged from 65.2 to 94.8 (median = 84.1) in 1991 and from 42.4 to 94.8 (median = 82.9) in 1992.*

ERRATA (CONT.)

Chronic Disease in Minority Populations

In Table C.5, we changed the numerical values (please see text below for a list of the changed values) for each cause of death in the 4th (American Indian/Alaska Native) and 5th (Asian/Pacific Islander) columns. We suggest that you cut this table out and paste it over the same table in Appendix C on page C-5.

Table C.5—Age-adjusted mortality rates for major chronic diseases as underlying cause of death for women, by race, United States, 1990

Cause	White American	African American	American Indian/ Alaska Native	Asian/ Pacific Islander
Ischemic heart disease	68.7	88.8	45.2	36.0
Lung cancer	25.9	26.4	13.4	11.1
Stroke	23.8	42.8	18.5	23.4
Breast cancer	22.9	27.5	10.0	10.0
Chronic obstructive pulmonary disease	15.2	10.7	8.9	5.2
Colorectal cancer	10.9	15.5	6.3	6.6
Diabetes	9.6	25.4	20.9	6.8
Cirrhosis	4.9	8.7	17.1	2.4
Cervical cancer	1.3	2.0	0.8	0.7

*Rate per 100,000 persons adjusted to the 1940 standard U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

In the 4th column (American Indian/Alaska Native), the rate for *ischemic heart disease* was changed from 12.2 to 45.2, *lung cancer* was changed from 3.4 to 13.4, *stroke* was changed from 5.1 to 18.5, *breast cancer* was changed from 2.5 to 10.0, *chronic obstructive pulmonary disease* was changed from 2.4 to 8.9, *colorectal cancer* was changed from 1.7 to 6.3, *diabetes* was changed from 5.4 to 20.9, *cirrhosis* was changed from 4.2 to 17.1, and the rate for *cervical cancer* was changed from 0.2 to 0.8.

In the 5th column (Asian/Pacific Islander), the rate for *ischemic heart disease* was changed from 126.8 to 36.0, *lung cancer* was changed from 43.2 to 11.1, *stroke* was changed from 84.9 to 23.4, *breast cancer* was changed from 40.6 to 10.0, *chronic obstructive pulmonary disease* was changed from 19.2 to 5.2, *colorectal cancer* was changed from 25.5 to 6.6, *diabetes* was changed from 40.6 to 6.8, *cirrhosis* was changed from 9.6 to 2.4, and the rate for *cervical cancer* was changed from 3.1 to 0.7.



ERRATA (CONT.)

Chronic Disease in Minority Populations

In Table C.6, we changed the numerical values (please see text below for a list of the changed values) for each cause of death in the 4th (American Indian/Alaska Native) and 5th (Asian/Pacific Islander) columns. We suggest that you cut this table out and paste it over the same table in Appendix C on page C-5.

Table C.6—Age-adjusted mortality rates for major chronic diseases as underlying cause of death for men, by race, United States, 1990

Cause	White American	African American	American Indian/ Alaska Native	Asian/ Pacific Islander
Ischemic heart disease	145.3	147.1	92.9	66.1
Lung cancer	56.6	86.2	28.1	25.6
Stroke	27.8	56.1	20.5	26.9
Chronic obstructive pulmonary disease	27.5	26.5	18.5	13.1
Colorectal cancer	16.5	21.6	6.6	10.4
Prostate cancer	15.3	35.3	7.7	6.9
Cirrhosis	11.5	20.0	22.9	5.3
Diabetes	11.3	23.6	20.6	8.0

*Rate per 100,000 persons adjusted to the 1940 standard U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

In the 4th column (American Indian/Alaska Native), the rate for *ischemic heart disease* was changed from 23.1 to 92.9, *lung cancer* was changed from 7.0 to 28.1, *stroke* was changed from 5.1 to 20.5, *chronic obstructive pulmonary disease* was changed from 4.6 to 18.5, *colorectal cancer* was changed from 1.6 to 6.6, *prostate cancer* was changed from 1.9 to 7.7, *cirrhosis* was changed from 5.7 to 22.9, and the rate for *diabetes* was changed from 5.1 to 20.6.

In the 5th column (Asian/Pacific Islander), the rate for *ischemic heart disease* was changed from 267.8 to 66.1, *lung cancer* was changed from 103.9 to 25.6, *stroke* was changed from 109.3 to 26.9, *chronic obstructive pulmonary disease* was changed from 53.2 to 13.1, *colorectal cancer* was changed from 41.9 to 10.4, *prostate cancer* was changed from 28.4 to 6.9, *cirrhosis* was changed from 21.0 to 5.3, and the rate for *diabetes* was changed from 32.6 to 8.0.

CHRONIC DISEASES IN MINORITY POPULATIONS

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FOREWORD

As the Nation's prevention agency, the Centers for Disease Control and Prevention (CDC) is committed to promoting health and quality of life by preventing and controlling disease, injury, and disability. To meet this challenge, CDC stresses translating research findings into effective community-based programs, strengthening the delivery of preventive health services, and designing programs to meet the needs of minority groups.

About 70 percent of all death and a substantial amount of morbidity and disability in the United States are attributed to conditions such as heart disease, cancer, stroke, diabetes, chronic obstructive pulmonary disease, and cirrhosis. This document summarizes national demographic and health data related to chronic disease in racial and ethnic minority populations. This synthesis of information is a valuable resource on chronic diseases and the associated behavioral risk factors in minority populations.

One of the goals of the *Healthy People 2000: National Health Promotion and Disease Prevention Objectives* is to reduce health disparities between the total population and the population groups that experience above average incidence of death, disability, and disease. These disparities exist within and across groups of Americans, but are most visible when we consider the health of our racial and ethnic minorities. Prevention efforts to reduce the risk factors associated with chronic diseases should be tailored to these groups. Prevention efforts are most effective when the affected communities actively participate in the development and implementation of the prevention efforts.

We hope these data contribute to your efforts to reduce health disparities among Americans.

David Satcher, M.D., Ph.D.

Director

Centers for Disease Control and Prevention



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ABBREVIATIONS

AMI—Acute myocardial infarction

BRFSS—Behavioral Risk Factor Surveillance System

CDC—Centers for Disease Control and Prevention

COPD—Chronic obstructive pulmonary disease

ICD-9—International Classification of Diseases (9th Revision)

IHD—Ischemic heart disease

IHS—Indian Health Service

NCI—National Cancer Institute

NCHS—National Center for Health Statistics

NHIS—National Health Interview Survey

SALAN—Survey of American Indians and Alaska Natives

SE—Standard error

SEER—Surveillance, Epidemiology, and End Results program

SUDAAN—Survey Data Analysis software package for weighted analysis



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1 INTRODUCTION

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As the United States looks toward the opportunities and challenges of a new century, many social problems must be faced, particularly inequality in health. Americans are born, live, and die in an environment where some persons have better health care than do others. The public health community has recognized this inequality and has established a national health initiative known as *Healthy People 2000* to “reduce health disparities among Americans.”¹ These disparities exist within and across groups of Americans but are most visible when we consider the health of our racial and ethnic minorities. Information from a variety of sources points to a diminished level of health among persons in minority populations.

In recognition of the multifaceted nature of disparities in health, the Public Health Service has set a number of objectives for special populations to be reached by the end of the century that will reduce disparities in risk factors, morbidity, mortality, disability, and access to care.² Success in meeting these objectives will reduce the inequality in health among racial and ethnic groups, increase the span of healthy life for Americans, and provide access to preventive services for all Americans.¹

Because about 70 percent of all death* and a substantial amount of morbidity and disability in the United States are attributed to conditions

such as heart disease, cancer, stroke, diabetes, chronic obstructive pulmonary disease, and cirrhosis, health professionals will require prevention and control programs that reduce disparities in the risk factors associated with morbidity and mortality from these chronic diseases. Addressing the health needs of special populations requires the availability of basic health data and a clear interpretation of the findings from these data. In the publication, *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*,¹ the authors note that “special population groups often need targeted preventive efforts, and such efforts require understanding the needs and the particular disparities experienced by these groups. General solutions cannot always be used to solve specific problems.”³

PURPOSE AND UTILITY

Chronic Disease in Minority Populations has been designed and written

- To provide a description of the diversity within the African-American, American Indian

*Based on number of deaths for selected causes of death for all races and both sexes. See Table 30 in *Health, United States 1992* and *Healthy People 2000 Review*, 1992.⁴

and Alaska Native, Asian and Pacific Islander, and Hispanic American populations.

- To synthesize and present in a single volume a comprehensive set of available health indicators on chronic disease among the four minority groups.
- To identify gaps in available data.
- To determine how much more progress the nation must make toward meeting selected year 2000 objectives within each minority group.
- To suggest ways in which public agencies can contribute to the improvement in quality, quantity, and dissemination of minority health data that support public health actions.

This document will serve as a general reference or sourcebook on minority health. It may also serve as a model for developing state-specific or county-specific fact books in situations where minorities are well-represented and data are plentiful. This document is unique among recent publications on minority health statistics because

- It focuses on within-group analyses for each of the four minority groups in a single document.
- It uses national or state-based aggregated data on a variety of health indicators related to chronic diseases, including their determinants and consequences.
- It presents data on the proportion of each of the four minority populations at the county levels.

AUDIENCE AND SCOPE

The primary audiences for the fact book include program managers and other professionals in state and local health departments, voluntary agencies, community-based organizations, and

federal agencies that are responsible for carrying out interventions. Because these individuals and agencies interface with the public through organized public health activities, they are in the best position to use the information in this book to realize the goals of *Healthy People 2000*.¹

The scope of this book is largely descriptive rather than analytic or prescriptive. We were not exhaustive in our synthesis of the literature, and we did not say all that is important about all chronic diseases that affect each minority group. Rather, we focused on the chronic diseases of national importance—those that account for the overwhelming proportion of deaths, morbidity, and disability in the general U.S. population.

The disparities in health between racial minorities and white Americans and between Hispanics and non-Hispanics provide a frame of reference for the current health indicators. The fact that racial and ethnic differences exist in health indicators does not mean that race and ethnicity are explanatory variables in a causal model. Because we did not attempt to test causal hypotheses in our presentation of minority and reference group comparisons, we did not conduct statistical tests of significance.

CONCEPTS AND CONTROVERSIES

Persons in the public health community agree that information on race and ethnicity is a critical element of public health surveillance efforts but do not agree about the concepts, measures, and uses of surveillance data on race and ethnicity.

Current standards for collecting and publishing federal statistics on race and ethnicity were established by legislation in 1976 and by the Office of Management and Budget's (OMB) Directive 15, *Race and Ethnic Standards for Federal Statistics and Administrative Reporting*.⁵ These standards have recently become the focus

of widespread controversy as social scientists, public health practitioners, and advocates for minority health have alternately challenged the validity of these statistics or advocated for more resources to collect more detailed data on particular minority groups. Prompted by controversy, constructive criticism, and a genuine commitment to excellence, federal agencies and health professionals have made substantial efforts to resolve some of those controversies and to improve the quality of public health information on racial and ethnic populations.

In March 1993, the Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR) convened a two-day workshop on *The Use of Race and Ethnicity in Public Health Surveillance*. Many experts in minority health statistics and health policy from several federal agencies, including the U.S. Bureau of the Census and the Indian Health Service, academia, and the private sector reviewed published articles and background documents before the workshop; listened to and discussed selected oral presentations during plenary workshop sessions; subdivided into work groups to identify limitations and corrective recommendations on current concepts, measures, and uses of race and ethnicity in public health surveillance; and refined the limitations and recommendations in concluding plenary workshop sessions.⁶ The full text of those limitations and recommendations is reproduced in Appendix A. The recommendations have been submitted to the director of CDC for consideration.

The information in this book is based on existing federal and state data that were collected and organized under the guidance of OMB Directive 15 and its successors. Thus, the material has many of the limitations listed in the

work group summaries.⁶ Nevertheless, we have made every effort to be sensitive to issues and concerns about the validity, precision, and incompleteness of the data sources and to avoid controversy through careful display and cautious interpretation of the data. At the beginning of each of the minority-specific chapters, we explore the diversity within these populations—the diversity that is hidden behind aggregated statistics. Most of the data in this book are based on racial and ethnic self-identification, which is then recoded into a standard set of categories. However, in some data systems, such as vital statistics, racial and ethnic identity is supplied by next of kin or other informed individual. In most cases throughout this book, data on Hispanics include Hispanic people of all races, and data presented for the four racial groups include people of Hispanic ethnicity because Hispanic identity encompasses individuals of all races. For example, persons who are classified as African-American are also classified as Hispanic or non-Hispanic. These issues are discussed in Chapter 5: Hispanic Americans.

TERMINOLOGY AND USAGE

In this document, the terms *African-American*, *American Indian and Alaska Native*, *Asian and Pacific Islander*, *Hispanic American*, and *white American* are used to refer to members of the respective racial or ethnic groups. These terms were chosen from several alternative choices. We are, however, aware of the sensitivities that may attend these choices, that other terms have been used in other publications, that some members of each group may prefer another term, and that the words used to indicate racial or ethnic identities continue to change with time. These issues are discussed in more detail in the section on the population included in each of the minority-specific chapters.

CONTENTS AND ORGANIZATION

Chronic Disease in Minority Populations includes six chapters and six appendixes. In chapter 1, we introduce and describe the subject matter of the book, explain why the subject matter is important, identify a target audience, suggest ways in which the information may be helpful to the target audience, and describe the scope and specific content of each chapter. In chapters 2–5, we present information on the burden of chronic disease in the four major racial and ethnic minority groups—African-Americans, American Indians and Alaska Natives, Asians and Pacific Islanders, and Hispanic Americans. Each chapter provides information on the following topics:

The Population. In this section, we used 1990 census data and other sources to describe population size and growth, migration patterns, geographic location, socioeconomic indicators, ethnic diversity, attitudes toward health care, and the public health implications of population diversity and growth.

Life Expectancy. We explain why the measure of life expectancy is important, describe the data on life expectancy at birth (and at older ages and over time), examine possible problems with the validity of the data, suggest possible reasons for high or low life expectancy among persons in the minority group, and suggest public health implications of the information on life expectancy as it relates to chronic disease prevention and control.

Mortality. We provide age- and sex-specific 1990 mortality rates among persons in two age groups (45–64 years old and 65 years old and older) for the following chronic diseases: ischemic heart disease, stroke, cancer (lung, colorectal, breast, cervical, and prostate), chronic obstructive lung disease, chronic liver disease, including cirrhosis, and diabetes mellitus. Using the 1980 U.S. population as the standard, we present sex-

specific age-adjusted mortality rates for 1990 for these diseases. Using the 1940 U.S. population as the standard, we also provide the sex-specific age-adjusted mortality rates for 1990 for the same diseases. The mortality rates for men and for women are compared within each minority group and between members of that minority group and their white counterparts.

Morbidity. In this section, we present the crude and age-adjusted sex-specific prevalence of eight self-reported chronic conditions: ischemic heart disease, hypertension, stroke, diabetes, liver diseases, asthma, chronic bronchitis, and emphysema. These 5-year averages are from the National Health Interview Survey (NHIS) from 1986 through 1990. We present cancer incidence and 5-year relative survival data from the Surveillance Epidemiology and End Results (SEER) Program of the National Cancer Institute for lung and bronchus cancer, colon and rectal cancer, breast cancer, and prostate cancer.

Health-Related Quality of Life. We present recent data from the NHIS (1986–1990) to describe sex- and age-specific respondent-assessed health status and limitation of major activity because of chronic conditions. We also assess the collective impact on these two health status indicators of the eight self-reported chronic conditions examined in the morbidity section. We do this by examining the prevalence of fair or poor health and of limitation of activity among the subgroup of respondents who reported one or more of the eight conditions.

Risk Factors and Preventive Health Practices. In this section, we present aggregated state-based prevalence estimates of selected risk factors, preventive health practices, and measures of access to preventive health services. These estimates and measures were derived from the combined Behavioral Risk Factor Surveillance System surveys for 1991 and 1992. *Healthy People 2000* objectives provide a context for the measures

selected. Data are provided on current smoking, alcohol use (binge and chronic), obesity, sedentary lifestyle, and high cholesterol; blood cholesterol and blood pressure measurements; routine medical check-up; Pap smear, clinical breast examination, and mammogram; and access to preventive services through health insurance or a health plan.

Summary and Implications of Findings. We focus on the most important chronic disease problems affecting that group and suggest actions that might be taken by responsible persons and agencies to fill gaps in information and to develop, implement, and evaluate programs aimed at reducing the impact of those problems in that particular group.

In chapter 6, we present a summary of the main public health messages contained in this book that are common to all minority groups and that are unique to each group. We also examine minority health issues in the context of a national health promotion and disease prevention strategy aimed at improving the lives of all Americans.

The six appendixes provide technical notes on the data sources and analytic methods used in the preceding chapters.

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2 AFRICAN-AMERICANS

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THE POPULATION

In this document, the term African-American will be used to mean persons whose lineage includes ancestors who originated from Africa. In the United States, the term *black* has been used to distinguish these persons from those of European origin without such ancestry.^{1,2} Originally based on physical appearance, the distinction came to be codified in laws that disregarded both heterogeneity in African ancestry and non-African lineage and that required persons with any African ancestry to be legally designated as black—the so-called *one-drop rule*.^{1,2} Although a high degree of intermixing has occurred between Africans, Europeans, and American Indians over several generations, the one-drop rule became a recognized social rule and the basis for group identification and self-identification. Thus, the category black conceals the fact that many persons so classified are of mixed racial and ethnic ancestry.¹

POPULATION SIZE AND GROWTH

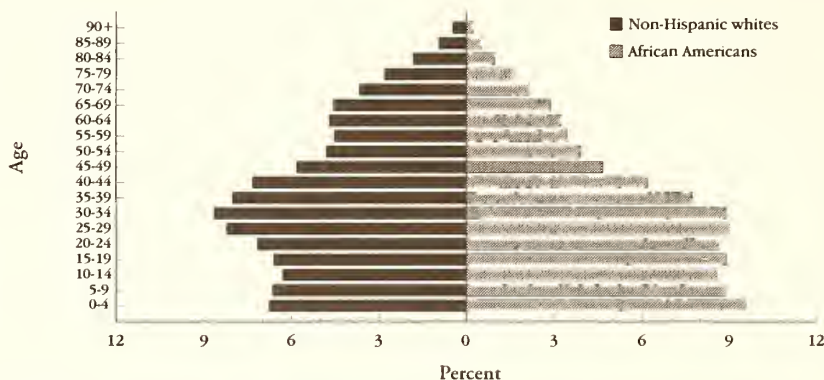
African-Americans comprise the largest minority group in the United States. In the 1990 census, they numbered 30 million or 12 percent of the total U.S. population—the largest percentage since 1900.^{3–5} From 1900 to 1940, the African-American population increased by 47 percent from 8.8 to 12.9 million. Over the next 40 years (1940–1980), it doubled to 26.5 million, and,

during the 1980s, the population increased 13 percent.⁵ Although a sustained decline in mortality among African-Americans began in 1900, the growth of the population, particularly after 1940, is attributable to a surge in the rate of natural increase (number of births *minus* number of deaths) that is primarily propelled by high birth rates.⁶

During the 1980s, the African-American population grew three times as fast as the white population (13% versus 4%), but this rate of growth was the slowest since the 1940s and the smallest for any minority group.⁵ The Bureau of the Census projects that the African-American population will grow at a faster rate than the white population into the 21st century, but this rate of growth will decrease over the next several decades.⁷ Immigration—the other component of population growth—accounted for 15 percent of the growth in the number of African-Americans during the 1980s.⁴ Because immigration rates and birthrates are lower among African-Americans than among Hispanics, Hispanics are expected to replace African-Americans as the largest minority group early in the 21st century (see Table A.1 in Appendix A).^{4,7}

The African-American population is younger than the non-Hispanic white population (*Figure 2.1*). For example, 76.5 percent of African-Americans are under 45 years old, and 65.8 percent of non-Hispanic whites are under this

Figure 2.1—Age distribution of the African-American and white non-Hispanic populations, United States, 1990



Source: Bureau of the Census, 1990.

age. Moreover, 8.4 percent of non-Hispanic African-Americans are 65 years old and older, and 14.3 percent of non-Hispanic whites are 65 years old and older (*Table 2.1*). In 1990, the median age for African-Americans was six years below the median age for whites (28 years versus 33.9 years).³

If fertility fell immediately to replacement levels among African-Americans, and if mortality

levels remained unchanged, and if immigration stopped, the African-American children born in the periods of high fertility would later contribute to a large increase in the numbers of African-Americans in the age groups (35 years and older) that are most susceptible to chronic diseases. For example, during the 1980s, the number of African-Americans aged 25–44 years increased by 37 percent and the number aged

Table 2.1—Age distribution of the African-American and white non-Hispanic populations, United States, 1990

Age Group (years)	African-Americans %	Whites %
<15	27.1	19.7
15–44	49.4	46.1
45–64	15.2	19.9
65–84	7.6	12.9
85+	0.8	1.4

Source: Bureau of the Census, 1990.

45–64 years grew by 14 percent. The respective changes among whites in these two age groups were 26 percent and 2 percent.⁴

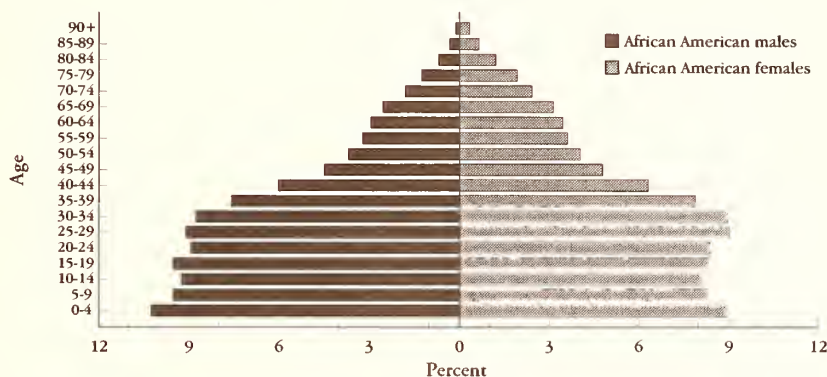
Among African-Americans under 15 years old, males outnumber females (*Figure 2.2*). In the older age groups, women outnumber men: 62 percent of elderly African-Americans are women.⁵ The male:female ratio also declines sharply with age among non-Hispanic whites. However, at all ages under 85 years, the male:female ratio is lower for African-Americans than for non-Hispanic whites (*Table 2.2*).

undercounting African-American males, particularly young inner-city males, during the census and of excessive premature mortality from injuries and chronic diseases.

MIGRATION PATTERNS

The majority of African-Americans are descendants of slaves who were transported from Africa to the United States and the Caribbean from the 17th to 19th centuries during the slave trade. At the beginning of the 20th century, 90 percent of the descendants of the slaves brought

Figure 2.2—Age distribution of African-American males and females, United States, 1990



Source: Bureau of the Census, 1990.

Further, the relative deficit of males in the African-American population is most striking among young adults and the middle-aged. In 1990, there were 10 percent fewer African-American males than females in the 15–44 age group but one percent more males than females among non-Hispanic whites. The male deficit among African-Americans aged 45–64 years rose to 20 percent, whereas the male deficit among non-Hispanic whites was just 6 percent. These differences reflect the combined effects of

directly to the United States resided in the South.²⁴ Largely rural, the population lived under conditions of severe economic deprivation and institutionalized social and political inequality.⁵ But between World War I and the 1960s, several regional, national, and international events stimulated a mass internal migration of the population. Two dimensions were evident in the migration: rural-urban and interregional. The rural-urban shift began in the South in the 1920s and continued for several

Table 2.2—Age-specific male:female ratios for the African-American and white non-Hispanic populations, United States, 1990*

Age Group (years)	African-Americans	Whites
<15	102.2	105.7
15–44	90.9	101.2
45–64	80.3	94.3
65–84	64.6	71.4
85+	42.3	37.5

*Male:female ratio = number of males per 100 females.

Source: Bureau of the Census, 1990.

decades. This shift occurred primarily because of a series of circumstances—mechanization, the Depression, and the effects of international competition and cotton substitutes on the cotton industry—that drastically reduced the demand for unskilled farm labor.⁵ Increasing numbers of African-Americans were forced out of agriculture. As their economic conditions worsened, they moved from rural areas to the urban centers of the South.

Concurrently, a rising demand for labor was occurring in the industrial centers of the North, and, after 1940, in the West because of such factors as immigration restrictions on eastern and southern Europeans during World War I and the rapid expansion of mass-production and the defense industries. The rural-urban shift intensified into a mass interregional migration.^{2,4} Between 1920 and 1970, 5.5 million African-Americans moved from the South to regions in the North and the West. During this period, the percentage of the total African-American population living in the South dropped from 90 to 53 percent.^{2,3} After 1970, a significant reverse migration occurred, and many African-Americans moved back to the South from the North and the West.² Internal migration transformed

African-Americans from a rural to an urban population. In the South, the percentage of urban dwellers increased from 25 to 67 percent, whereas in the North and the West, the proportion rose from 84 to 97 percent.²

During the latter half of the 20th century, international migration (from the Caribbean and Africa) again assumed importance in the African-American experience. The Caribbean has been a source of voluntary migrants to the United States since the early 19th century. However, 2.1 million or three-quarters of all legal immigrants to the United States from this region were admitted between 1971 and 1990.⁸ After 1965, the number of immigrants from sub-Saharan African countries, such as Nigeria, increased sixfold.⁹ By the 1990 census, foreign-born persons accounted for approximately five percent of African-Americans nationwide. This percentage is projected to increase to 10 percent by the year 2010.⁹ Because immigrants from the Caribbean and Africa migrate to specific regions, these projections have already been exceeded in New York and Florida where foreign-born persons already account for 20 and 12 percent of the African-American populations, respectively.

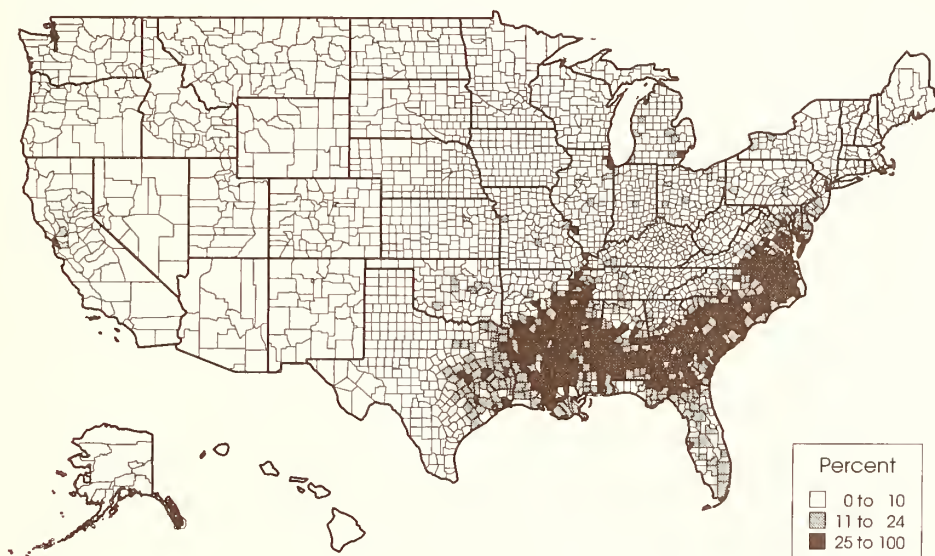
GEOGRAPHIC DISTRIBUTION

The current geographic distribution of African-Americans is strongly linked to their migration history. In 1990, the regional distribution of African-Americans was the same as in 1970: 54 percent lived in the South, 18 percent lived in the Northeast, 19 percent lived in the Midwest, and 9 percent lived in the West. The states in which African-Americans account for 10 percent or more of the population are in the South, Northeast, and the North Central regions of the United States. Large portions of the southern states have counties in which African-Americans compose more than 10 percent of the population (*Figure 2.3*). In the North and the West, however, the population remains concentrated

in major cities, such as Chicago, Cleveland, Detroit, Los Angeles, New York City, Philadelphia, Oakland, and San Francisco.

Most Americans are urban dwellers, but African-Americans and whites tend to live in different areas of cities. The 1990 census showed that 84 percent of African-Americans and 76 percent of whites live in metropolitan areas, but almost 60 percent of African-Americans and only 26 percent of whites live in central cities.^{3,4} Although the percentage of African-Americans living in the suburbs increased by 50 percent during the 1980s, only about one-quarter of all African-Americans lived in the suburbs in 1990. African-Americans represented more than 50 percent of the total population in Detroit,

Figure 2.3—Percentage of African-Americans in U.S. counties,† 1990*



*non-Hispanic

†See *Table A.2* in Appendix A for a list of the shaded counties.

Source: Bureau of the Census, 1990.

Washington, D.C., New Orleans, Baltimore, and Memphis.⁵

Immigrants tend to concentrate in specific areas. Caribbean immigrants have settled primarily in the Northeast and the South. In the 1990 census, 68 percent of persons born in the English Caribbean and 76 percent of those born in Haiti were residents of just two states: New York and Florida.

SOCIOECONOMIC INDICATORS

African-Americans are disproportionately more disadvantaged than whites.^{3,4} For example, among persons aged 25 years and older, African-Americans have fewer years of education than do whites: in 1990, a lower percentage of African-Americans (63%) than whites (78%) had completed high school, and a lower percentage of African-Americans (11%) than whites (22%) had completed college. African-Americans also earn less than whites regardless of the level of education they attain. In fact, the racial disparity in income is positively associated with years of formal education.³ In 1990, the difference between the median incomes for whites and African-Americans who worked full time and year round ranged from \$2,200 for those who had not completed high school to \$6,100 for those who had completed college. This racial disparity in income is most striking among males.³ Thus, African-American individuals (32%) and their families (29%) are more likely to be classified as poor than are white individuals (11%) and their families (8%).³

ETHNIC DIVERSITY

The African-American population is not, as is often perceived, a homogeneous group. The proportion of African-Americans who are foreign-born will continue to grow if net migration of these persons exceeds the natural

increase among persons born in the United States. Consequently, new immigrants, as well as a growing population of first and second generation descendants, will come to account for an increasingly larger proportion of the African-American population. Thus, the African-American population will constitute a group of people of very diverse linguistic and cultural backgrounds.

HEALTH CARE

Beliefs and practices regarding the health care system will be influenced by factors such as years of formal education, income, historical experience, recency of immigration, degree of acculturation, and culture. Although generalizations may be misleading, African-Americans tend to hold attitudes that are distinct from non-Hispanic whites in two areas: use of alternative health providers and *fatalism* regarding particular medical diagnoses.¹⁰ The use of alternative health practitioners among African-Americans may be related to their historical experience of limited access to medical care because of poverty and discrimination.^{6,11} Certain experiences, such as the Tuskegee Experiment in which a group of African-American men with syphilis went untreated for decades as part of a federally funded study, have also left many African-Americans (regardless of socioeconomic status) suspicious and often hostile toward government-sponsored health research and intervention programs.

The fatalistic attitude of many African-Americans who have been diagnosed with cancer has been the subject of a small but growing number of studies. The origin of this attitude resides perhaps in the deeply religious world view of many blacks with a strongly deterministic orientation—"This illness is part of God's will and I must accept it."¹² The low 5-year survival rates for most cancers may also explain some of the skepticism that some

African-Americans harbor toward the benefits of early detection and treatment of malignant disease.

PUBLIC HEALTH IMPLICATIONS

Together, the young median age and high fertility among African-Americans favor an increase in the number of persons in the age groups that are the most susceptible to chronic diseases. The burden of chronic disease is likely to increase if the current levels of risk prevail. A major public health challenge is to effectively target primary prevention efforts at the young. The geographic clustering of African-Americans in the South and in urban areas offers states and county health departments the opportunity to mount highly efficient intervention efforts. Barriers to reducing risk will include the linguistic and cultural diversity of the population. Thus, public health professionals must recognize the heterogeneity of the population, identify behaviors that protect health, and design intervention and health promotion activities that reinforce positive behaviors.

CONCLUSION

Like other Americans, African-Americans are a diverse group. This diversity may affect health-related behaviors and outcomes. This section provided the background for the following sections on life expectancy, mortality, morbidity, health status, and health behaviors.

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LIFE EXPECTANCY

The most comprehensive indicator of patterns of health and disease, as well as living standards and societal development, is the life expectancy of a population at various ages (Appendix B). This hypothetical measure indicates the chances of survival beyond certain ages if current age-specific mortality rates for an actual population were to continue. Thus, life expectancy is a useful measure for comparing the mortality experiences of different populations.

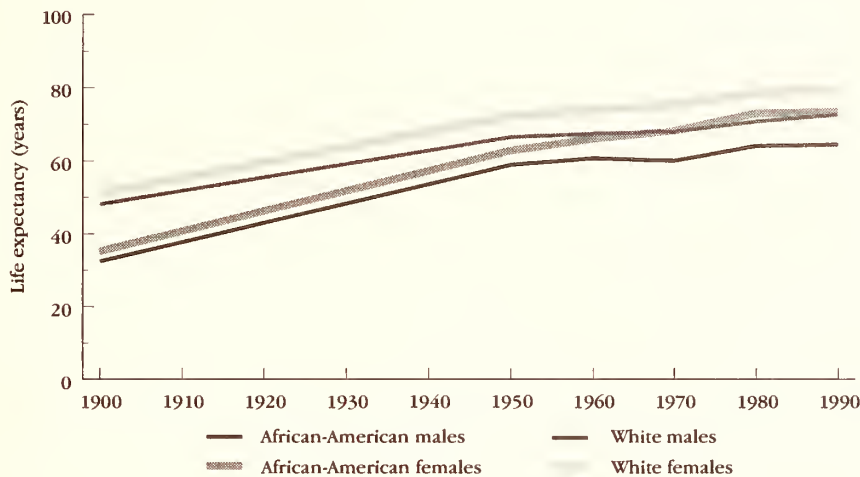
The level of mortality experienced by a population is negatively related to the standard of living among persons in that population.^{1–3} Improvement in standards of living is associated with a change in the distribution of causes of mortality from one in which infectious and parasitic diseases predominate to one that is characterized by degenerative or chronic diseases. As populations progress along the continuum of this health transition, mortality declines sharply, particularly among children and women of childbearing age; the average age at death rises; and life expectancy increases.¹ The onset of this transition occurred 40 years later for African-Americans than for whites.^{4,5} For the relatively younger African-American population, the situation of high death rates at young ages is more closely related to the population's standard of living than to the degenerative effects of aging.³

At the beginning of the 20th century, life expectancy at birth for African-Americans was 33.0 years. By the middle of the century, it had risen by 28 years to 60.7 years (*Figure 2.4*). Thereafter, life expectancy at birth increased more slowly, reached a peak of 69.5 years in 1984, and then declined to 68.8 years in 1989. In 1990, the life expectancy for African-Americans was 69.1 years.⁶ Although the net increase from 1900–1990 was greater for African-Americans than for whites (36.1 years versus 28.5 years), the data show a persistent racial disparity that decreased from 14.6 years in 1900 to 5.8 years in 1984 and then increased to 7.5 years in 1989. The data also suggest a temporal lag between the life expectancies of African-Americans and whites: in 1990, life expectancy for a newborn African-American child was the same as that for a white child born in 1950.⁶

In 1990, African-American life expectancy at birth was 9.1 years longer for females than for males (73.6 years versus 64.5 years).⁶ The survival advantage among African-American females born in 1990 continued a trend of increasing divergence in the life expectancies for African-American males and females (*Figure 2.5*). In contrast, whites have shown a steady decline since 1970 in the female survival advantage. This decline is due to the decreasing mortality among white males.⁷

In relation to whites, the recent erosion of the gains in life expectancy at birth made by African-Americans was greater for males than for females. In 1970, the deficit between African-Americans and whites was 8.0 years for males and 7.3 for females. In 1984, this deficit decreased to 6.5 years for males and 5.1 years for females.⁶ By 1990, however, the gap between males (8.2 years) had returned to the 1970 level, and the gap between females showed a small increase to 5.8 years. In 1990, the racial gap was present across all adult age groups, decreased with age, and was

Figure 2.4—Life expectancy at birth for African-Americans and whites, by sex, United States, 1900–1990



Source: Health, United States, 1992

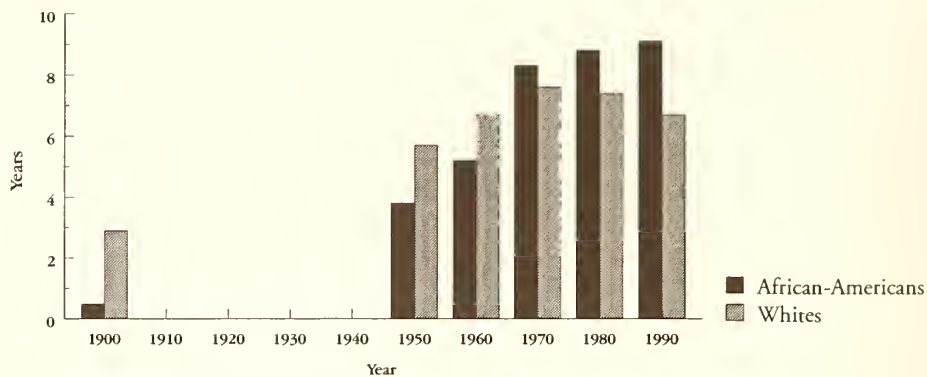
substantially greater for males than for females who were under 45 years old (*Figure 2.6*). Further, at 1990 mortality rates, 43 percent of African-American male infants cannot expect to survive to age 65 years. This percentage is in sharp contrast to the 24 percent of white males, 25 percent of African-American females, and 14 percent of white females who cannot expect to survive to this age.⁸

In 1990, life expectancy at selected ages was also greater for females than for males.⁹ An African-American female aged 15 years in 1990, could expect to live an additional 60.2 years, or 9 years longer than her male peer. A 45-year-old woman could expect to outlive a man of similar age by 6.2 years (32.4 years versus 26.2 years). The remaining life expectancy was 17.2 for a

65-year-old woman and 13.2 for a 65-year-old man (*Figure 2.7*). At all ages, life expectancies are higher for white adults than for African-American adults. However, because mortality risks are substantially higher for younger African-American males than for white males in the same age group, the difference between the sexes is greater for African-American adults than for white adults.

Researchers who examined the differential in life expectancy among African-Americans and whites by cause of death in the United States found that cardiovascular diseases, homicide, cancer, and infant deaths contributed to nearly half of the differential in 1980.¹⁰ When the effect of poverty, unemployment, and age were controlled, heart disease and homicide differentials

Figure 2.5—Trends in female/male advantage* in years of life expectancy at birth for African-Americans and whites, United States, 1900–1990



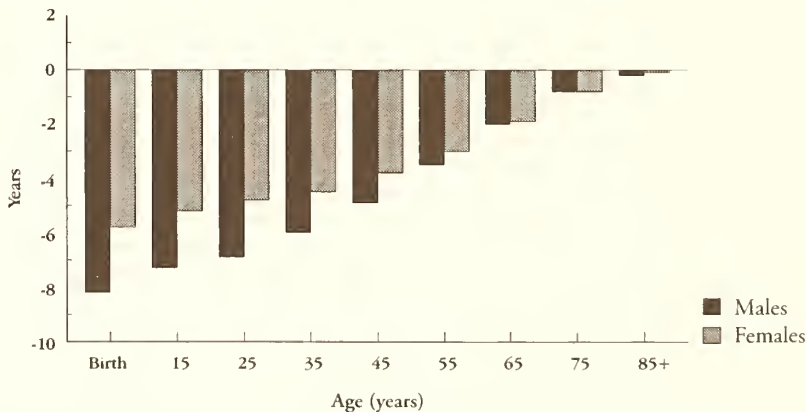
*Female/male advantage = life expectancy for women *minus* life expectancy for men.

Source: Statistical Bulletin 1992; 73(3):2–9.

were among the strongest predictors of the racial differential in life expectancy.³ In 1986, the difference in age-adjusted black-white mortality

rates for men was 26.3 percent for circulatory disease, 24.5 percent for cancer, and 13.0 percent for homicide; the difference for women

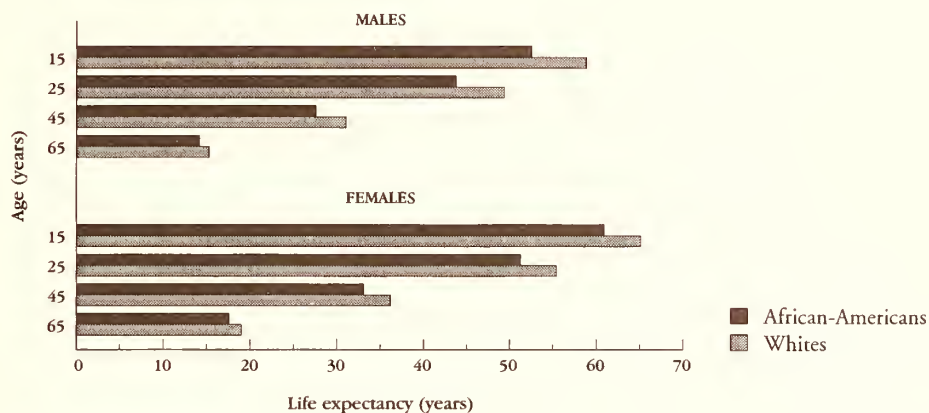
Figure 2.6—African-American/white disadvantage* in life expectancy in years at selected ages, by sex, United States, 1990



*African-American/white disadvantage = life expectancy for African-Americans *minus* life expectancy for whites.

Source: Statistical Bulletin 1992; 73(3):2–9.

Figure 2.7—Life expectancy at selected ages for African-Americans and whites, by sex, United States, 1990



Source: Statistical Bulletin 1992; 73(3):2–9.

was 53.3 percent for circulatory disease, 10.6 percent for cancer, and 8.1 percent for diabetes.²

In summary, throughout the 20th century, African-Americans experienced substantial improvements in life expectancy at all ages. These improvements were more pronounced for females than for males and have contributed to a trend of increasing divergence between the sex-specific estimates. The racial disparity persists and is greater for males and young adults.

In the next section, the specific role of the chronic diseases that exert a major impact on longevity and the quality of life among African-Americans is examined from the perspective of mortality rates.

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MORTALITY

Mortality data are used to identify the leading causes of death among subgroups. By examining sex-, age-, and cause-specific mortality rates by race/ethnic groups for the most important chronic diseases, public health planners can determine how best to meet our national goals of increasing the span of healthy life for Americans and of reducing health disparities among Americans. The focus is on middle-aged and elderly populations because the burden of premature death from chronic diseases and the opportunities for prevention and control are greater among persons in these populations than among persons in younger populations.

The following section presents age-specific and age-adjusted 1990 mortality rates by sex for African-American and white adults for the following 10 chronic diseases: chronic obstructive pulmonary disease (COPD), cirrhosis, colorectal cancer, diabetes, ischemic heart disease (IHD), lung cancer, stroke, breast cancer, cervical cancer, and prostate cancer (see *Table C.1* in Appendix C for ICD-9 codes).

AGE-SPECIFIC MORTALITY RATES

Women. The top three causes of death from chronic disease among African-American women aged 45-64 years are IHD, lung cancer

and breast cancer (*Table 2.3*). The rate for IHD is almost twice the rate for either lung or breast cancer. IHD is also the leading cause of death among women 65 years old and older, and stroke and diabetes outrank lung and breast cancer as the second and third leading causes of death. Age-specific mortality rates are higher for African-American women in the older age category than for those in the 45-64 age group—IHD is approximately eight times higher, stroke seven times higher, and diabetes and cervical cancer are almost five times higher.

The mortality rates for eight of the nine chronic diseases were higher for African-American women aged 45-64 years than for white women aged 45-64 years. However, white women aged 65 years and older had higher mortality rates for five of the eight diseases—IHD, COPD, cirrhosis, lung cancer, and breast cancer—than did African-American women in this same age group. Differences between the race/ethnic groups in cause-specific mortality rates are shown in *Table 2.3*. The death rate from diabetes for African-American women aged 45-64 years is three times the rate for white women aged 45-64 years, and the rate for African-American women 65 years old and older is twice the rate for white women of comparable age.

Men. The three leading causes of death among African-American men aged 45-64 years are IHD, lung cancer, and stroke (*Table 2.4*). The rank order for men aged 65 years and older is the same as that for men in the 45-64 age category. All rates are much higher among men in the older age category: five times higher for IHD and stroke and three times higher for lung cancer. The age-specific mortality rate for prostate cancer among men in the older age group is approximately 15 times the rate for the younger men.

Age-specific mortality rates for the eight diseases are higher for African-American men

Table 2.3—Rank order of age-specific crude mortality rates* for major chronic diseases as underlying cause of death for African-American women and white women, United States, 1990

Persons Aged 45–64 Years		Persons Aged 65 Years and Older	
African-American	White	African-American	White
Ischemic heart disease (142.0)	Ischemic heart disease (75.1)	Ischemic heart disease (1085.8)	Ischemic heart disease (1179.0)
Lung cancer (75.4)	Lung cancer (68.0)	Stroke (480.9)	Stroke (420.6)
Breast cancer (75.0)	Breast cancer (60.3)	Diabetes (227.5)	Lung cancer (180.7)
Stroke (67.6)	COPD† (24.1)	Lung cancer (156.1)	COPD† (176.8)
Diabetes (51.5)	Stroke (24.0)	Colorectal cancer (142.6)	Breast cancer (135.3)
Colorectal cancer (31.8)	Colorectal cancer (20.2)	Breast cancer (130.4)	Colorectal cancer (120.8)
Cirrhosis (23.4)	Diabetes (16.4)	COPD† (81.7)	Diabetes (106.3)
COPD† (22.6)	Cirrhosis (12.6)	Cirrhosis (21.7)	Cirrhosis (24.8)
Cervical cancer (4.0)	Cervical cancer (2.5)	Cervical cancer (19.3)	Cervical cancer (12.1)

*Rate per 100,000 persons.

†COPD—Chronic obstructive pulmonary disease.

Source: CDC, National Center for Health Statistics, National Vital Statistics System, 1990.

aged 45–64 years than for white men in the same age group. However, African-American men aged 65 years and older have lower mortality rates for IHD, COPD, and cirrhosis than do white men in this age group. The mortality rate for stroke is three times higher among African-American men aged 45–64 years than among white men in the same age group. African-American men aged 65 years and older had a two times higher rate of prostate cancer than did white men aged 65 years and older.

Comparison of men and women. Among African-Americans aged 45–64 years, IHD and lung cancer are the leading causes of death for both sexes. For men and women in the 65+ age category, the two leading causes of death among men are IHD and lung cancer; the two leading causes of death among women are IHD and stroke.

AGE-ADJUSTED MORTALITY RATES

Women. In descending order of age-adjusted

Table 2.4—Rank order of 1990 age-specific crude mortality rates* for underlying cause of death from major chronic diseases for African-American men and white men, United States, 1990

Persons Aged 45–64 Years		Persons Aged 65 Years and Older	
African-American	White	African-American	White
Ischemic heart disease (278.7)	Ischemic heart disease (237.1)	Ischemic heart disease (1374.9)	Ischemic heart disease (1584.0)
Lung cancer (219.1)	Lung cancer (127.1)	Lung cancer (596.8)	Lung cancer (473.6)
Stroke (99.8)	Cirrhosis (31.5)	Stroke (518.4)	Stroke (363.9)
Cirrhosis (59.7)	COPD† (31.3)	Prostate cancer (472.2)	COPD† (343.1)
Diabetes (51.3)	Colorectal cancer (29.4)	COPD† (266.0)	Prostate cancer (217.5)
Colorectal cancer (41.3)	Stroke (29.2)	Colorectal cancer (194.6)	Colorectal cancer (164.9)
COPD† (39.6)	Diabetes (19.5)	Diabetes (176.8)	Diabetes (106.3)
Prostate cancer (31.9)	Prostate cancer (12.1)	Cirrhosis (43.9)	Cirrhosis (47.6)

*Rate per 100,000 persons.

†COPD—Chronic obstructive pulmonary disease.

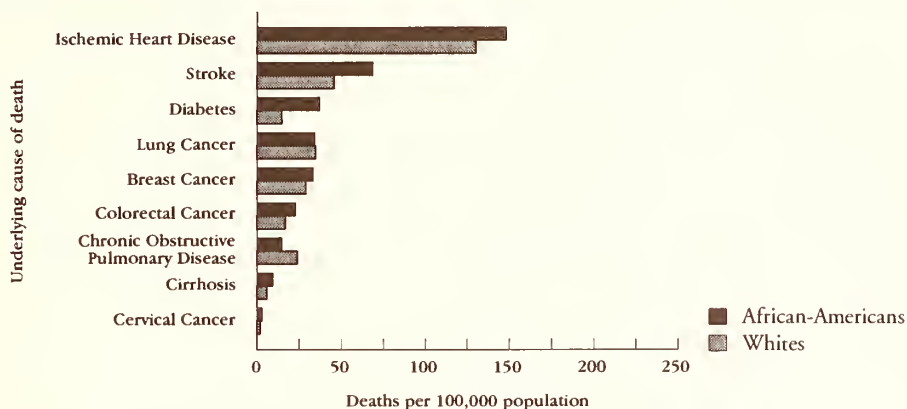
Source: CDC, National Center for Health Statistics, National Vital Statistics System, 1990.

rates per 100,000 persons, the five leading causes of death attributed to chronic disease for African-American women are IHD (148.3), stroke (68.7), diabetes (37.1), lung cancer (34.2), and breast cancer (33.4) (*Figure 2.8*). In 1990, age-adjusted mortality rates were generally higher for African-Americans than for whites. For example, the age-adjusted death rates for African-American women were somewhat higher for IHD (148.3 versus 130.2), 1.5 times higher for stroke (69.7 versus 45.8), and 2.5 times higher for diabetes (37.1 versus 14.8). Age-adjusted rates for lung cancer were similar

for women in both racial groups, but the rates for breast and colorectal cancers were 15 and 35 percent higher, respectively, for African-American women than for white women (see *Table C.2* in Appendix C).

Men. In descending order of age-adjusted rates per 100,000 persons, the five leading causes of death attributed to chronic disease among men are IHD (228.2), lung cancer (116.2), stroke (86.4), prostate cancer (63.9), and COPD (41.3) (*Figure 2.9*). The age-adjusted rates for IHD were slightly lower for African-American men than for white men (228.1

Figure 2.8—Age-adjusted cause-specific mortality rates* for African-American women and for white women, by underlying cause of death, United States, 1990



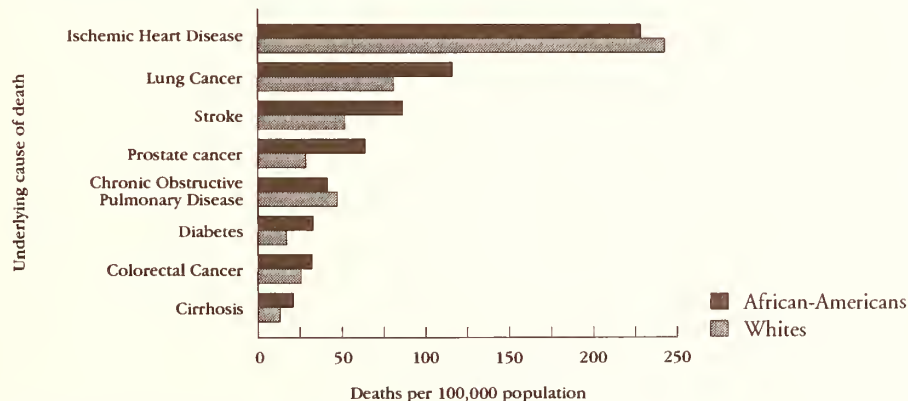
*Age-adjusted to the 1980 U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

versus 242.4), but the rate for stroke was 67 percent higher for African-Americans (86.4 versus 51.8). The age-adjusted death rate associated with diabetes for African-American

men was almost twice that for white men (33.1 versus 17.3); and the age-adjusted death rates for prostate cancer were more than twice the rate for white men (63.9 versus 28.7). The age-

Figure 2.9—Age-adjusted cause-specific mortality rates* for African-American men and for white men, by underlying cause of death, United States, 1990



*Age-adjusted to the 1980 U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

African-Americans
Whites

adjusted death rate for lung cancer was 44 percent higher for African-Americans (116.2 versus 80.8), and the rate for colorectal cancer was 26 percent higher for African-American men (32.4 versus 25.8).

The leading sites of cancer death among African-Americans in the national data agree with reports from the Surveillance, Epidemiology, and End Results (SEER) registries, but the rank orders for lung and breast cancers are reversed for women.¹ Site-specific rates from these two sources differ because different standard populations were used. Nevertheless, the magnitudes of the relative differences between rates for African-Americans and whites are essentially the same for both sets of mortality data.

Comparison of men and women. As expected, age-adjusted mortality rates for the leading causes of death, with the exception of diabetes, were higher for men than for women. In 1990, the male:female mortality ratios for African-Americans were 1.5 or greater for IHD, cirrhosis, COPD, and lung cancer. See Table C.2 and Table C.3 in Appendix C.)

Comparison of age-specific rates. The data show that African-Americans die at higher rates from the same leading causes of death than do whites. This finding remains constant even after controlling for the different age structures of the two populations.

PUBLIC HEALTH IMPLICATIONS

Heart disease, stroke, and cancer (lung, breast, and colorectal) are the leading causes of death for African-Americans and for whites. However, cause-specific mortality rates for these diseases are generally higher among African-Americans than among whites. This finding suggests commonalities in exposure to the causes of these diseases but differences between the groups in their exposures

to determinants of death. Increased prevalence of smoking, hypertension, and obesity among African-Americans are undoubtedly some of the causes for these higher mortality rates. However, socioeconomic factors such as poor living conditions (diet, sanitation, stress) and access to quality health care, have been shown to make a greater contribution to the disparities in mortality rates between these groups than do the known biological risk factors.²⁻⁶

These data may be used by public health planners to establish priorities for prevention and intervention services. For example, weight reduction programs may be implemented in African-American communities to address total mortality and mortality attributed to IHD, breast cancer, stroke, and diabetes. Research projects should seek to find out why smoking prevalence is lower among African-American youths than white youths but higher among African-American adults than white adults.

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MORBIDITY

PREVALENCE OF SELECTED DISEASES

In the National Health Interview Surveys (Appendix D) that were conducted from 1986-1990, African-Americans reported the same leading chronic conditions as did whites (*Table 2.5* and *Table 2.6*). In descending order of prevalence, the three conditions most commonly reported by African-Americans were hypertension, asthma, and diabetes. The prevalence of hypertension was almost twice that of asthma and diabetes combined.

Hypertension. The prevalence of self-reported hypertension was higher for African-Americans than for whites for both sexes. The prevalence of hypertension increased markedly with age and rose more steeply among women than among men (*Figure 2.10*). Between the age groups 18-44 years and 45-64 years, the prevalence of hypertension quadrupled for both men (8.6% to 32.8%) and women (11.5% to 43.0%); reached as high as 36.7 and 59.2 percent for 65-74 year old men and women, respectively; then decreased to 30.3 and 54.8 percent among men and women aged 75 years and older. After adjusting for age, the prevalence of hypertension was 43 percent higher for African-American women than for African-American men.

Asthma. Asthma ranked second among the chronic conditions most commonly reported by African-Americans. For both men and women,

Table 2.5—Crude and age-adjusted prevalence for selected chronic conditions for African-American women and white women, by descending rank order for African-Americans, United States, 1986-1990

	Crude Prevalence		Age-adjusted Prevalence	
	African-American	White	African-American	White
Condition	%	%	%	%
Hypertension	17.75	12.57	19.73	10.96
Asthma	5.10	4.30	5.07	4.30
Diabetes	4.23	2.67	4.89	2.36
Chronic bronchitis	3.97	6.32	4.02	6.23
Ischemic heart disease	1.24	2.19	1.42	1.83
Stroke	1.01	1.20	1.20	0.98
Emphysema	0.17	0.69	0.17	0.58

Data on liver diseases are not presented for women because the relative standard error for African-American women was greater than 30 percent.

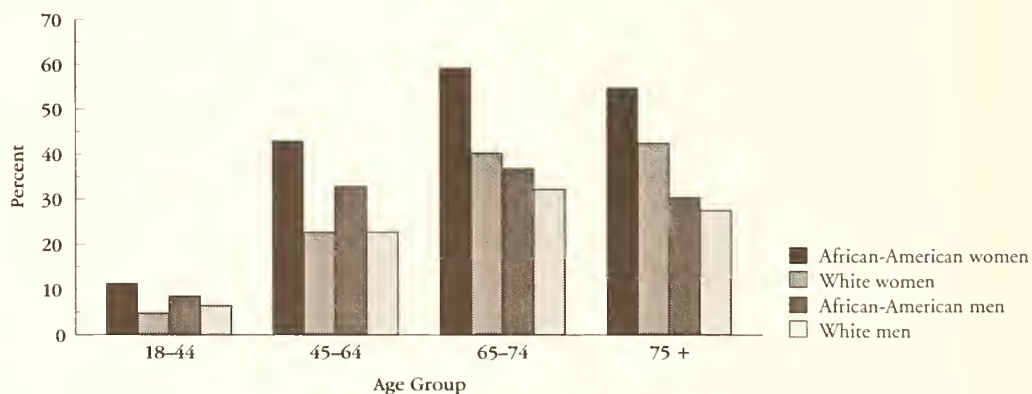
Source: CDC, NCHS, National Health Interview Survey, 1986-1990.

Table 2.6—Crude and age-adjusted prevalence for selected chronic conditions for African- American and white men, by descending rank order for African-Americans, United States, 1986–1990.

Condition	Crude Prevalence		Age-adjusted Prevalence	
	African-American	White	African-American	White
	%	%	%	%
Hypertension	11.29	10.64	13.79	10.32
Asthma	4.70	4.14	4.43	4.26
Diabetes	3.19	2.46	4.13	2.45
Chronic bronchitis	2.94	4.33	2.88	4.42
Ischemic heart disease	1.14	3.48	1.64	3.53
Stroke	1.08	1.10	1.54	1.14
Emphysema	0.62	1.19	0.93	1.21
Liver diseases	0.30	0.28	0.33	0.26

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

Figure 2.10—Prevalence of self-reported hypertension among African-Americans and whites, by age and sex, United States, 1986–1990



Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

the prevalence of asthma was highest among those under 18 years old and among those 65 years old and older. The highest age-specific prevalence was 4.1 percent for men aged 65–74 years and 5.4 percent for women aged 45–64 years. The age-adjusted prevalence of asthma was 14 percent higher for African-American women than for African-American men.

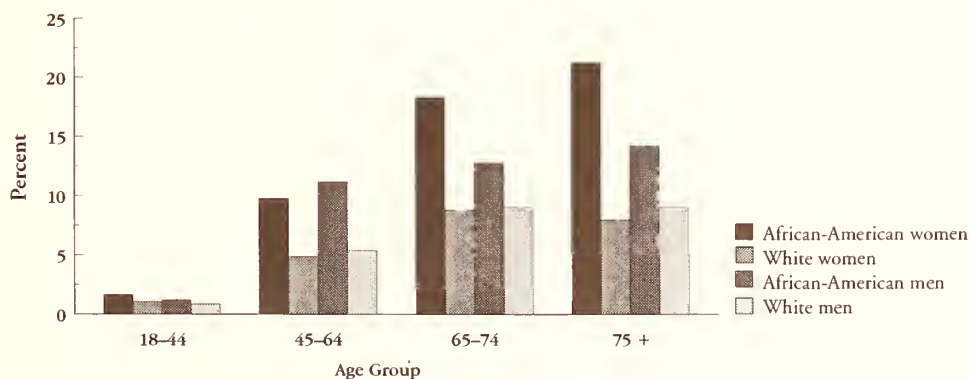
Diabetes mellitus. Diabetes ranked as the third most commonly reported condition among African-Americans. For both men and women, the prevalence of diabetes increased with age. The prevalence rose sixfold to tenfold by age 45 years. After 45 years, the prevalence rose more steeply for women than for men (Figure 2.11). The prevalence of diabetes was 11.2 percent for men aged 45–64 years, 12.7 percent for those aged 65–74 years, and 14.2 percent for those 75 years and older. The prevalence was 9.8 percent among women aged 45–64 years, 18.3 percent for women aged 65–

74 years, and 21.2 percent for those 75 years and older. The age-adjusted prevalence of diabetes was 18 percent higher for African-American women than for African-American men.

African-American women had age-adjusted prevalences that were 80 percent higher for hypertension, 18 percent higher for asthma, 200 percent higher for diabetes, and 22 percent higher for stroke than those for white women. The age-adjusted prevalences for African-American men were 34 percent higher for hypertension, 69 percent higher for diabetes, and 35 percent higher for stroke than the prevalences for white men.

From 1986–1990, hypertension and diabetes were among the most common self-reported chronic conditions among African-Americans, particularly among women and persons over 44 years old. Other national data show that the prevalence estimates obtained from clinical

Figure 2.11—Prevalence of self-reported diabetes mellitus among African-Americans and whites, by age and sex, United States, 1986–1990



Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

examinations are at least twice as great as those obtained from self-reports.^{1,2} However, the age, sex, and race patterns demonstrated by these data are the same as those found in several population surveys.

CANCER INCIDENCE AND SURVIVAL

African-Americans have the highest cancer incidence of any race/ethnic group in the United States.^{3,4} From 1973–1990, the overall age-adjusted incidence rates for all cancer sites combined increased similarly for African-Americans and whites.⁴ However, from 1986–1990, the age-adjusted incidence rate was 20 percent higher for African-American men than for white men (*Figure 2.12*). The racial disparity among men was greater at younger ages. For example, the age-adjusted incidence rate for men under 65 years old was 33 percent higher for African-Americans than for whites.⁴ The age-adjusted incidence rates for African-American women and white women were

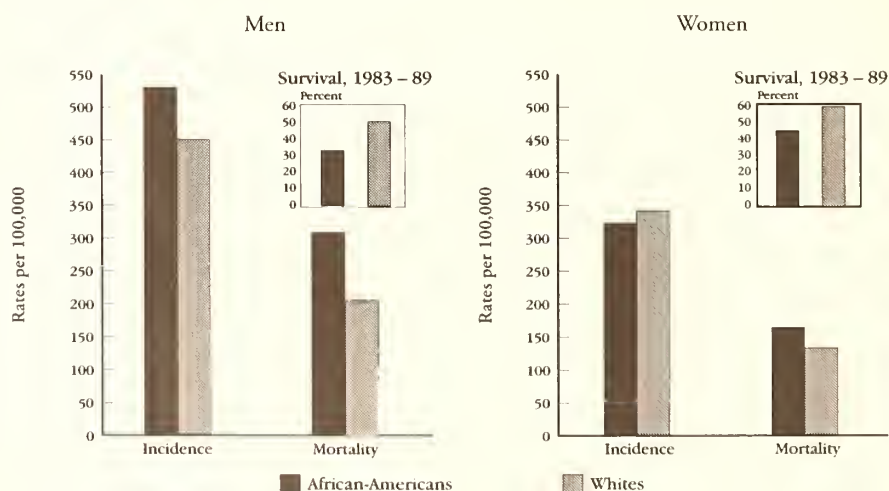
similar overall as well as among younger and elderly women.

The prognosis for African-Americans who are diagnosed with cancer is poorer than for whites.^{3,4} From 1983–1989, the 5-year relative survival rate for all cancer sites combined was 39 percent for African-Americans and 55 percent for whites.

In the United States, the principal sites of cancer are the same for African-American and white adults (*Figure 2.13*). In descending order of incidence rates, the most common cancers among African-Americans are prostate for men, breast for women, and lung and colorectal cancers for both sexes.

Prostate. African-American men have the highest reported incidence rates for this type of cancer in the world.³ In the United States, the age-adjusted rate from 1986–1990 was 36 percent higher for African-American men than for white men (145.8 versus 107.3 per 100,000). This excess in incidence was twice as great for African-American men under 65 years old as for

Figure 2.12—Incidence and mortality rates (1986–1990) and relative survival rates (1983–1989) for all cancers combined, by race and sex, SEER Cancer Registries



Source: SEER Cancer Statistics Review, 1973–1990.⁴

Figure 2.13—Age-adjusted incidence rates* for the leading cancers in the United States, by sex and race, SEER Cancer Registries, 1986–1990



* Adjusted to the 1970 U.S. population.

Source: NCI, Surveillance, Epidemiology, and End Results (SEER) Cancer Registries, 1986–1990.

those 65 years old and older (60% versus 30%). Since 1973, incidence rates for prostate cancer have been rising more rapidly among white men than among African-American men.⁴

Breast. Cancer of the breast is the most common cancer among African-American women. From 1973–1990, the increase in the age-adjusted incidence rates for this cancer was similar for African-American and white women (24.5% versus 23.3%). From 1986–1990, the overall incidence rate for African-American women was 17 percent lower than that for white women (93.1 versus 112.1 per 100,000 persons).

Lung and bronchus. Cancer of the lung and bronchus is the second most common cancer among African-American men and the third most common among African-American women (Figure 2.13). From 1986–1990, the age-adjusted incidence rates were three times higher for men than for women. However, from 1973–1990, the incidence increased eight times faster

among women than among men.⁴

From 1973–1990, the rates increased more steeply for African-American men than for white men. From 1986–1990, African-American men showed a 53 percent excess in incidence (124.1 versus 81.2 per 100,000 persons). Rates for women showed no overall racial difference. In both sexes, the racial disparity was clear at younger ages and greatest for men: African-American men under 65 years old had an excess in incidence of 87 percent and African-American women in this same age group had an excess of 24 percent.⁴

Colon and rectum. Colorectal cancer is the third most common cancer among African-American men and the second most common among African-American women. Sex-specific incidence rates are very similar. However, between 1973–1990, the incidence rates for African-American men rose twice as fast as those for African-American women.⁴

From 1973–1990, age-adjusted incidence rates for colorectal cancer increased nine times faster among African-American men than among white men.⁴ Between 1986 and 1990, the overall rates were similar, but African-American men under 65 years old showed a 24 percent excess in this type of cancer. Although incidence rates increased for African-American women, the data indicate that rates decreased among white women. From 1986–1990, the overall rates for colorectal cancer were similar, but rates were 36 percent higher for African-American women who were under 65 years old than for white women in the same age group.

Relative survival rates provide a comparison of the survival rates for cancer patients with the rates prevailing in the general population of persons of similar age, sex, and race.⁴ Thus, relative survival rates provide a measure of the effectiveness of medical intervention—early detection, access to clinical care, and the efficacy of care—on mortality caused by a specific cancer.

The 5-year relative survival rates among African-Americans are 50 percent or greater among men for cancers of the bladder and prostate and among women for cancers of the breast, uterine cervix, and corpus uteri. The relative survival rates are under 20 percent for lung cancer among African-Americans (*Figure 2.14*). Between 1983 and 1989, the 5-year relative survival rates for African-Americans were lower than those for whites for all principal cancers, except for the lung and stomach. Little or no racial disparity in survival is evident for those cancers because the best available treatment does not improve survival. The poorer survival rates found among African-Americans for breast, cervical, and colorectal cancers suggest that factors such as low quality health care, inadequate continuity of care, and insufficient access to optimal methods of detection,

diagnosis, and treatment may be common among persons in this population.⁵

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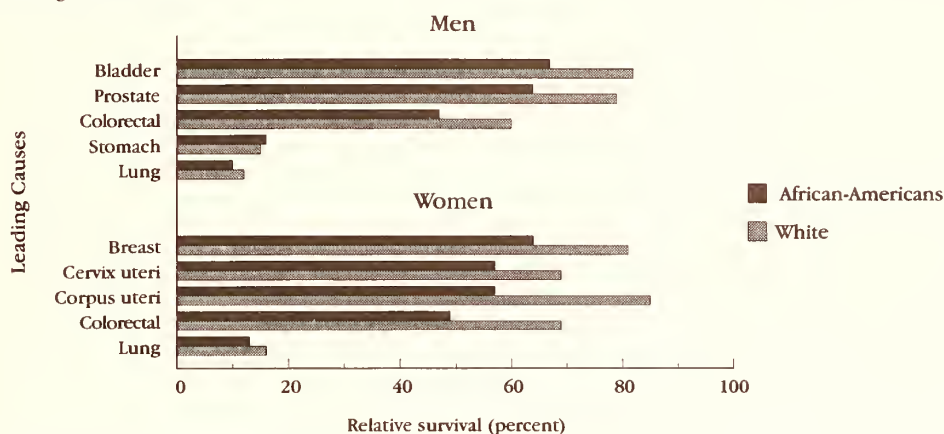
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Figure 2.14—The 5-year relative survival rates* for the leading cancers in the United States, by sex and race, SEER Cancer Registries, 1983–1989



*Percentage of expected survival (age, race, sex).

Source: NCI, Surveillance, Epidemiology, and End Results (SEER) Cancer Registries, 1983–1989.

HEALTH-RELATED QUALITY OF LIFE

The goals of chronic disease prevention and control are to reduce the incidence of disease and the severity of illness, delay the onset of disability, and increase the span of healthy life. Thus, population-based measures of respondent-assessed health status and limitation of activity associated with chronic conditions, together with measures of mortality and morbidity, are important for monitoring the total health burden from chronic diseases. In this section, data from the National Health Interview Surveys (NHIS), which were conducted from 1986–1990, are used to describe respondent-assessed health status and limitation of major activities from chronic disease (Appendix E). In addition, the collective association of eight self-reported chronic conditions—asthma, stroke, chronic bronchitis, diabetes, emphysema, hypertension, IHD, and liver disease—with respondent-assessed health status and limitation of activity from chronic conditions was assessed for two subgroups: respondents reporting one or

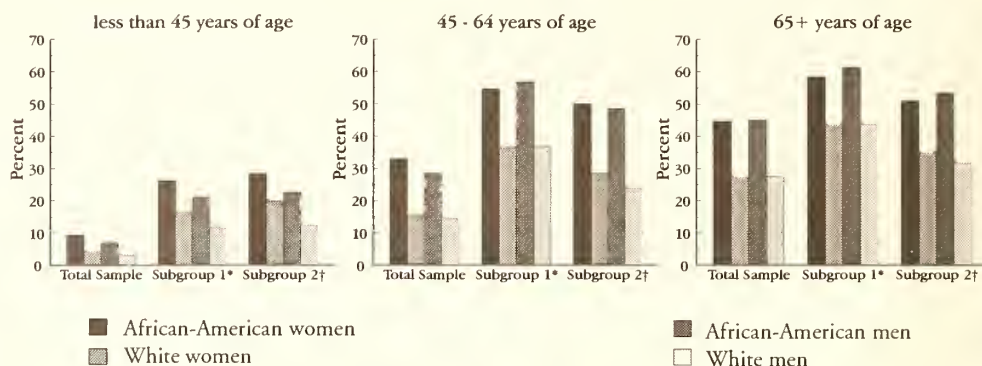
more of the eight conditions, and respondents reporting hypertension.

RESPONDENT-ASSESSED HEALTH STATUS

From 1986–1990, the proportion of African-Americans who rated their health as fair or poor increased with age (Figure 2.15). Of the women interviewed, 9.3 percent of those under 45 years old reported fair or poor health, whereas 33 percent of those aged 45–64 years rated their health as fair or poor. This age-related increase was also evident among African-American men: 6.9 percent of men under 45 years old reported fair or poor health, and 28.5 percent of those aged 45–64 years rated their health as fair or poor. Approximately 45 percent of elderly (65+ years) African-American adults reported fair or poor health.

In all age groups, persons in the subgroup reporting at least one leading chronic condition were more likely to rate their current health as fair or poor than were persons in the total sample. Compared to the prevalence in the total

Figure 2.15—Age-specific prevalence of self-reported fair and poor health status among African-American adults and white adults, by type of sample, United States, 1986–1990



*Subgroup 1—persons who reported any one of the following conditions: hypertension, asthma, diabetes, chronic bronchitis, ischemic heart disease, stroke, emphysema, liver diseases.

†Subgroup 2—persons who reported being told that they had high blood pressure or hypertension.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

sample of African-Americans, prevalence among African-Americans in the chronic condition group was three times higher for those under 45 years, almost two times higher for women aged 45–64 years, and two times higher for men aged 45–64 years. Among African-Americans aged 65 years and older, the prevalence of self-reported fair or poor health was about 30 percent higher among those in the chronic condition group than among persons in the total sample. Across all age groups, the subgroup of African-Americans who reported hypertension also had a higher prevalence of poor perception of health than did those in the total sample.

In the total sample, respondent-assessed fair or poor health was twice as common among African-Americans as among whites. In the subgroup of respondents who reported one or more of the selected chronic diseases, prevalence was at least 50 percent higher for African-Americans than for whites. Among respondents

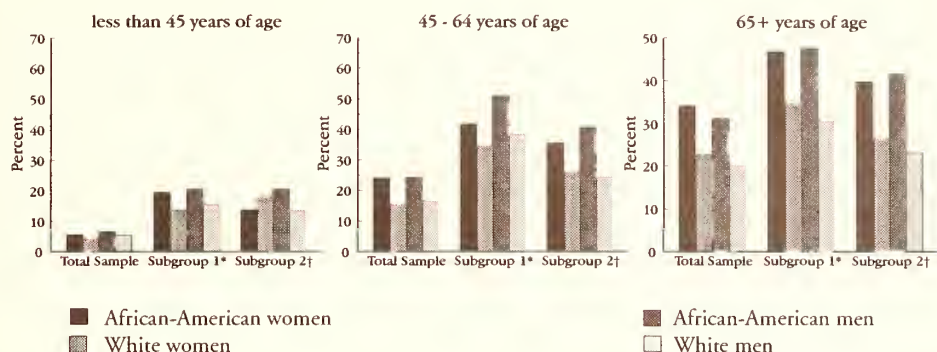
who reported hypertension, prevalence of fair or poor health was at least 40 percent higher for African-Americans than for whites.

LIMITATION OF ACTIVITY BECAUSE OF CHRONIC CONDITIONS

From 1986–1990, reports of limitation in major activity because of chronic conditions were strongly associated with age (*Figure 2.16*). The prevalence among African-American adults aged 45–64 years was four times the prevalence for those under 45 years old.

Prevalence also increased with age among the subgroup reporting at least one chronic condition and was higher among persons in this group than among persons in the total sample. Compared to the prevalence in the total sample of African-Americans, the prevalence of limited major activity among those adults in the chronic condition group was three times higher for those under 45 years of age, almost two times as high for those aged 45–64 years, and 1.5 times

Figure 2.16—Age-specific prevalence of self-reported limitation in activity because of chronic conditions among African-American adults and white adults, by type of sample, United States, 1986–1990



*Subgroup 1—persons who reported any one of the following conditions: hypertension, asthma, diabetes, chronic bronchitis, ischemic heart disease, stroke, emphysema, liver diseases.

†Subgroup 2—persons who reported being told that they had high blood pressure or hypertension.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

higher for those aged 65 years and older. This pattern was the same for the group of persons who reported that they had hypertension.

These data indicate that when well-being and functional dimensions of health status are measured, respondent-assessed fair or poor health is more prevalent among African-Americans than among whites in all age groups (*Figure 2.15*). As expected, these adverse aspects of health were more common among persons with chronic conditions.¹ These data must be interpreted with caution because the relation with race appears somewhat different for these two dimensions of health status. Other evidence indicates that African-Americans are more likely than whites to report poor health status even after controlling for age, sex, and socioeconomic status, whereas the racial difference in limitation of activity is largely explained by differing age and income distributions.^{2,3} In addition, the predictive power of well-being and functional

status for outcomes such as the use of health services and mortality have been investigated primarily among older adults.⁴⁻⁶ The implications of these research findings for young populations with high levels of premature mortality and for women of all ages remain unclear.^{7,8}

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RISK FACTORS AND PREVENTIVE HEALTH PRACTICES

This section compares the prevalence of selected risk factors and preventive health practices among African-American and white adults. These factors and practices were identified by the Behavioral Risk Factor Surveillance System (BRFSS) in 1991 and 1992 (Appendix F). The sample is drawn from the population of adults aged 18 years and older with telephones in each of the states that conducted the BRFSS during the study period (*Table 2.7*). National data (NHIS, 1986-1990) indicate that people under 45 years old are less likely than older people to live in households with telephones and that at all ages African-Americans are less likely than whites to have telephones. In the weighted sample, African-Americans in five states accounted for about a third of the study population: New York (10.1%), California (6.5%), Illinois (5.9%), Florida (5.8%), and North Carolina (5.7 %). The age distribution of the weighted sample of African-American

women is very similar to the 1990 census; African-American men in the sample were somewhat younger than the men in the 1990 census.

A greater percentage of African-American respondents than white respondents was under 45 years old, had less than 12 years of education, and lived in households with annual incomes of less than \$10,000. Women of both races were older than their male counterparts: the mean age was 42.3 years for African-American women and 40.7 years for African-American men. The mean age was 45.5 years for white women and 43.0 years for white men.

RISK FACTORS

Cigarette smoking. The prevalence of self-reported current cigarette smoking was lower among African-American women than among white women. This pattern was reversed for men (*Table 2.8*). The prevalence of smoking was highest among African-American men who were 45-64 years old (32%), who had 12 years or less of education (30%), and who had annual household incomes of less than \$10,000 (34.2%). The prevalence was lowest among men 65 years old and older (20.1%), among men with 12 years or more of education (23.3%), and among men with incomes of \$20,000 or greater. The prevalence among African-American women was highest for those who were under 65 years old (21.1%), for those who reported 12 years or less of education (21.0%), and for those who reported household incomes under \$20,000 (21.4%); the prevalence was lowest among those who were 65 years old and older (9.4%), among those with 12 years or more of education (17.1%), and among those with incomes of \$20,000 or greater (18.5%).

In both racial groups, self-reported smokers were more common among men and persons under 65 years old and among those with the lowest levels of education and income. Among

Table 2.7—Sample size and percentages for demographic variables for African-American adults and white adults aged 18 years and older, United States,* 1991–1992

Characteristic	Women				Men			
	African-American		White		African-American		White	
	sample size	weighted estimate %	sample size	weighted estimate %	sample size	weighted estimate %	sample size	weighted estimate %
Number	10,465		90,369		5,913		67,444	
Age (years)								
18–44	6,333	61.2	46,548	54.5	3,697	64.2	38,672	59.3
45–64	2,486	24.1	23,159	25.2	1,473	23.5	17,978	25.8
65+	1,646	14.7	20,662	20.3	743	12.3	10,794	14.9
Education (years)								
< 12	2,628	23.6	13,841	14.8	1,400	23.3	9,404	14.4
12	3,632	35.2	31,877	36.3	2,078	36.8	21,493	32.2
> 12	4,176	40.8	44,490	48.7	2,423	39.7	36,466	53.3
refused	29	0.3	161	0.2	12	0.2	81	0.1
Annual Household Income								
< \$10,000	3,199	27.8	13,807	12.9	1,094	17.5	5,652	7.9
\$10,000–\$20,000	2,416	22.9	18,221	18.9	1,390	23.0	11,953	16.6
> \$20,000	3,611	36.2	46,250	54.6	2,775	47.2	43,228	65.3
Unknown/refused	1,239	13.1	12,091	13.6	654	12.3	6,611	10.1

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

cigarette smokers, African-American men smoke fewer cigarettes per day than do white men (15.9 versus 22.3), and African-American women smoke fewer cigarettes per day than do white women (14.0 versus 18.9).

Sedentary lifestyle. African-Americans were more likely than whites to report a sedentary lifestyle in the previous month (*Table 2.8*).

African-American women were more likely than their male counterparts to report a sedentary lifestyle in the previous month, whereas the prevalence among white adults was the same for both sexes. A sedentary lifestyle in the previous month was reported by more than three-quarters of African-American adults who were 65 years old and older, by those who had less than 12 years of

Table 2.8—Year 2000 targets and prevalences of selected self-reported risk factors among African-American adults and white adults aged 18 years and older, United States,* 1991–1992

Risk Factor	Year 2000 Target [†]	Women				Men			
		African-American		White		African-American		White	
		%	(SE) [‡]	%	(SE) [‡]	%	(SE) [‡]	%	(SE) [‡]
Cigarette smoking [§]	15%	19.4	(0.55)	21.6	(0.20)	27.4	(0.80)	24.5	(0.25)
Sedentary lifestyle	— [‡]	67.7	(0.67)	56.4	(0.25)	62.8	(0.87)	56.2	(0.29)
Alcohol use									
chronic drinking ^{**}	— [‡]	0.7	(0.11)	1.1	(0.06)	4.3	(0.36)	6.7	(0.15)
binge drinking ^{††}	— [‡]	4.5	(0.31)	7.5	(0.14)	15.7	(0.65)	23.1	(0.25)
Overweight ^{‡‡}	20%	37.7	(0.68)	21.7	(0.21)	28.4	(0.81)	24.8	(0.26)
High cholesterol ^{§§}	— [‡]	25.7	(0.79)	27.0	(0.25)	21.4	(0.95)	25.8	(0.31)

* State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†] *Healthy People 2000*: specific targets given in objective 3.4 (cigarette smoking) and 2.3 (overweight).

[‡] Standard error.

[§] Cigarette smoking—ever smoked 100 cigarettes and currently smoke regularly.

^{||} Sedentary lifestyle—fewer than three 20-minute sessions of leisure-time physical activity per week.

[‡] Year 2000 targets do not match standard BRFSS variables.

^{**} Chronic drinking—60 or more drinks of alcohol during the past month.

^{††} Binge drinking—consumption of five or more alcoholic beverages on at least one occasion during the past month.

^{‡‡} Overweight—body mass index ≥ 27.8 for men and ≥ 27.3 for women (body mass index = weight in kilograms divided by height in meters squared [BMI=kg/(m)²]).

^{§§} High cholesterol awareness—respondents ever told by a health professional that their cholesterol is elevated.

Sources: CDC, Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

education, and by those who had household incomes of less than \$10,000. For African-American men, the data indicate that the prevalence of a sedentary lifestyle was lowest for those aged 18–44 years (57.3%), for those with 12 years or more of education (54.1%), and for those with incomes of \$20,000 or more (57.7%). Comparable estimates for African-American women were 65.2 percent, 59.5 percent, and 60.0 percent, respectively.

Overweight. African-American adults were more likely to report that they were overweight than were white adults (*Table 2.8*). African-

American women reported being overweight more frequently than did African-American men, whereas white men were more likely to report being overweight than were white women. Among African-Americans, the prevalence of self-reported overweight varied inversely with the years of education and household income among women but not among men. The prevalence of self-reported overweight was highest for women aged 45–64 years (51.5%), for women with less than 12 years of education (50.9%), and for women with incomes under \$10,000 (45.8%); prevalence was lowest for women aged 18–44

years (30.3%), for women with more than 12 years of education (28.9%), and for women with incomes of \$20,000 or more (32.1%).

PREVENTIVE HEALTH BEHAVIORS

African-Americans who were current smokers were more likely than whites to report quitting for at least one day (*Table 2.9*). The prevalence of self-reported efforts to lose weight was similar for African-American and white adults. Twenty-four percent of African-American men and 42 percent of African-American women reported

that they were trying to lose weight. Of the African-American men who reported that they were trying to lose weight, 75.7 percent reported that they ate fewer calories to lose weight, and 50 percent reported that they had increased their physical activity. Of the African-American women who reported that they were trying to lose weight, 81.6 percent reported that they ate fewer calories, and 50 percent reported that they had increased their physical activity.

The prevalence of persons who reported that they had their blood pressure checked was

Table 2.9—Year 2000 targets and the prevalences of self-reported preventive health practices recommended in Healthy People 2000 among African-American adults and white adults aged 18 years and older, United States, 1991–1992*

	Year 2000 Target [†]	Women		Men	
		African-American	White	African-American	White
Health Practice		% (SE) [‡]	% (SE) [‡]	% (SE) [‡]	% (SE) [‡]
Current cigarette smokers: quit at least one day in past year	50%	63.0 (1.49)	50.0 (0.53)	61.8 (1.63)	51.0 (0.57)
Blood pressure checked within past 2 years	— [§]	97.8 (0.21)	96.4 (0.10)	94.4 (0.46)	92.8 (0.16)
Cholesterol checked within past 5 years	75%	63.3 (0.69)	69.3 (0.24)	56.5 (0.90)	63.5 (0.29)

*State-aggregate data; 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]*Healthy People 2000*: specific targets given in objective 3.6 (quit cigarette smoking at least one day) and objective 15.14 (have cholesterol checked).

[‡]Standard error.

[§] The objective for measuring blood pressure (objective 15.13) has two parts: having blood pressure measured within the preceding 2 years and being able to state whether their blood pressure is normal or high. The BRFSS survey cannot answer the second part of the objective. The target for the objective is 90 percent.

Sources: CDC, Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

greater than 90 percent for African-American adults and for white adults. In fact, estimates were slightly higher for African-American men and women than for white men and women. More women than men in both racial groups reported having their blood pressure checked.

In contrast, African-Americans were less likely than whites to have their cholesterol levels checked. The prevalence was lower among men than among women of both racial groups, but the lowest prevalence was found among African-American men.

A similar proportion of African-American women and white women reported ever having had a Papanicolaou (Pap) smear. However, African-American women were more likely than

white women to report having a Pap smear within the two years preceding the interview (*Table 2.10*). The prevalence of self-reports of more recent screening varied inversely with age, education, and income in both groups of women. However, in all strata, African-Americans were more likely than whites to report having had a recent Pap smear. For African-Americans, the prevalence was highest among women aged 18–44 years, among women with more than 12 years of education, and among those with household incomes of \$20,000 or more. The prevalence was lowest among women 65 years old and older, among women with less than 12 years of education, and among women who reported household incomes less than \$10,000.

Table 2.10—Year 2000 targets and self-reported prevalence of breast and cervical cancer screening among African-American women and white women, United States,* 1991–1992

Screening Practice	Year 2000 Target [†]	African-American		White	
		%	(SE) [‡]	%	(SE) [‡]
Women aged 18 years and older:					
ever had a Pap smear [§]	95%	73.1	(0.66)	72.5	(0.23)
had within the preceding 2 years [§]		66.1	(0.68)	62.3	(0.25)
Women aged 40 years and older:					
ever had a clinical breast examination and mammogram	80%	65.5	(0.96)	70.7	(0.31)
Women aged 50 and older:					
Had a clinical breast examination and mammogram within the preceding 2 years	60%	54.9	(1.27)	57.7	(0.39)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]Screening practices recommended in *Healthy People 2000*: specific targets given in objective 16.12 (Pap smear) and objective 16.11 (clinical breast examination and mammogram).

[‡]Standard error.

[§]For women with an intact uterine cervix.

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

Among women aged 40 years and older, African-Americans were less likely than whites to report that they had ever been screened for breast cancer. When only women 50 years old and older were considered, African-Americans were less likely than whites to report that they had been screened within the 2 years before the interview. The latter finding was observed in all categories of age, education, and income. For African-American women, the prevalence was highest among the elderly, among women with more than 12 years of education, and among women with household incomes of \$20,000 or greater. The groups with lowest frequency of recent screening were women under 65 years old, women with less than 12 years of education, and women with annual incomes of less than \$10,000.

ACCESS TO CARE

African-Americans were more likely than whites to report visiting a doctor for a routine checkup (*Table 2.11*). A higher percentage of women than men reported having had a recent checkup. African-Americans were also more likely than whites to report that they had no health care coverage or that they were unable to see a doctor during the preceding year because of the cost. Among persons with health care coverage, African-Americans were less likely than whites to report having a plan that did not cover preventive services.

PUBLIC HEALTH IMPLICATIONS

In summary, the data from African-American participants in the BRFSS survey are consistent with the sociodemographic characteristics described in the population section. The data are also consistent with the well-documented evidence that risk factors for the principal causes of illness and death—cigarette smoking and

overweight—that are prevalent in the general population are common among African-Americans.¹ However, data from African-Americans and data from the general U.S. population show that the risk status of African-Americans deteriorates earlier in life. This deterioration is particularly evident among African-Americans of low socioeconomic status.²

Overweight is a major health problem for African-Americans in all socioeconomic groups. Other national data show that African-American women have a higher incidence of obesity and weight gain in young adulthood and are more resistant to weight loss both in general and after pregnancy than are white women.^{3,4} Although efforts to increase awareness and promote physical activity and weight control should be directed at the general population of African-Americans, young women of childbearing age should receive priority.

A tendency of African-American women to engage more readily in secondary rather than primary prevention practices has been reported.⁵ Increased efforts are needed to identify opportunities and conditions to support early cancer detection, timely follow-up, and improved access to optimal quality of care for persons of lower socioeconomic status.^{6,7} Barriers to primary prevention behaviors, particularly barriers related to socioeconomic status, need to be identified so that culturally appropriate interventions can be developed.

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Table 2.11—Prevalences of self-reported routine checkup and access to care among African-American adults and white adults aged 18 years and older, United States,* 1991–1992

Indicator	Women				Men			
	African-American		White		African-American		White	
	%	(SE) [†]	%	(SE) [†]	%	(SE) [†]	%	(SE) [†]
Routine checkup within the past year [‡]	87.4	(0.46)	77.0	(0.21)	75.2	(0.76)	61.6	(0.29)
More than 1 year/ less than 2 years	7.1	(0.37)	10.4	(0.15)	11.9	(0.56)	14.2	(0.20)
More than 5 years ago	1.9	(0.18)	5.3	(0.12)	5.4	(0.41)	11.1	(0.18)
Never had routine checkup	0.8	(0.13)	1.8	(0.07)	1.5	(0.21)	3.0	(0.11)
Unable to see a doctor during preceding year because of the cost [§]	18.4	(0.55)	14.3	(0.18)	12.5	(0.57)	9.5	(0.18)
Lack of health care plan	20.8	(0.58)	12.5	(0.18)	22.2	(0.75)	15.1	(0.23)
Health plan does not cover checkups or other preventive services [¶]	15.1	(0.55)	19.9	(0.21)	17.3	(0.77)	19.3	(0.24)

*State-aggregate data—47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]Standard error.

[‡]About how long has it been since you last visited a doctor for a routine checkup?

[§]Was there a time during the past 12 months when you needed to see a doctor but could not because of the cost?

^{||}Do you have any kind of health care plan? (Health care plan was described as health insurance, prepaid plans such as health maintenance organization (HMO), or government plans, such as Medicare.)

[¶]When you are not sick, does your health care plan cover all, most, some, or none of your checkups or other preventive services?

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

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SUMMARY

African-Americans comprise the largest minority group in the United States. They are younger, reside primarily in the central cities of the large conurbations of the South, Northeast and Midwest, have less formal education, lower individual and household incomes, and are more likely to be poor. Throughout the 20th century, African-Americans experienced substantial improvements in life expectancy, particularly among females. Despite these gains, the life expectancy for a newborn African-American child born in 1990 was the same as that for a white child born in 1950. This survival deficit has remained at the same level since the 1950s, is present at all ages, is greater for males than for females, and is most marked among persons under 55 years of age. In 1990, the female survival advantage among African-Americans continued a trend of increasing divergence in life expectancy between the sexes. Cardiovascular diseases, homicide, cancer, and infant deaths contribute to nearly half of the differential in life expectancy between African-Americans and whites.

In 1990, African-Americans died at higher rates from the same leading causes as did whites even after controlling for age. The age-adjusted mortality rate ratios for African-Americans were 1.5 or greater for stroke, diabetes, cirrhosis, and cancers of the cervix and prostate.

From 1986–1990, African-Americans reported the same leading chronic conditions as whites but at generally higher levels. These conditions exert a substantial burden on the health of middle-aged and elderly adults, particularly women. Using self-reported data, we can see that at least two in five middle-aged African-American women have hypertension, one in ten has diabetes, one in five is a current smoker, half are overweight, and approximately

three in five do not engage in regular physical exercise. Many of the major risk factors are also well established among younger adults: 10 percent have hypertension, 20 percent are current smokers, 50 percent reported a sedentary lifestyle, and 30 percent of young women are overweight. Major risk factors—overweight, a sedentary lifestyle, and cigarette smoking—are more prevalent among African-Americans with low levels of income and education. In addition, when well-being and functioning dimensions of health status were measured, African-Americans were more likely than whites to report having fair to poor health and limitation of activity because of chronic conditions.

PUBLIC HEALTH IMPLICATIONS

Much of the future growth of the African-American population will occur in the age groups most susceptible to chronic diseases. Because data based on self-reports underestimate the true burden of disease, the absolute number of persons with chronic illnesses will be greater than suggested by the data presented. Barriers to risk reduction will include the linguistic and cultural diversity of the population, low levels of income and education, and the fact that a high proportion of African-Americans tend to live in physical and social environments that do not reinforce positive health choices. The deficit of African-American males has important ramifications for family structure, economic status, and thereby, an indirect effect on health status. In addition, the numbers of poor elderly African-American women are likely to increase.

Unlike the general U.S. population, chronic disease mortality, morbidity, and risk factors begin to increase at younger ages among African-Americans. A major public health challenge is to identify and exploit opportunities for primary prevention of risk factors among the large cohort of young African-Americans. The early

onset of risk factors (deterioration of risk status) requires interventions that integrate population-based and high-risk approaches. The heterogeneity of the African-American population needs to be recognized so that culturally appropriate interventions and health promotion activities may be designed that will include reinforcement of positive behaviors.

RECOMMENDATIONS

Public health agencies at the local, state, and federal level should increase efforts to expand the scope of surveillance to include those African-Americans not easily reached by traditional methods. Special attention should be given to reaching young African-American men.

Conceptually, there are three dimensions to the prevention of illness and maintenance of health: health promotion, health protection, and disease prevention. Current health promotion strategies focus primarily on individual lifestyle

practices—modification of risk at the individual level. Education, knowledge, and the development of skills are necessary to change behavior, but they are not sufficient. Public health agencies should collaborate with other agencies to develop and implement prevention strategies aimed at altering the social and physical environment to one that provides reinforcement for positive health choices.

Stronger consideration should be given to health protection measures that specifically target the young and African-American women of all ages. In this regard, prevention strategies should employ a combination of community-based and high-risk approaches aimed at reducing the average levels of risk factors in the entire population to prevent the onset of major risk factors, such as overweight and hypertension.

Public health agencies should focus on long-term planning to facilitate institutionalization of prevention activities at the community level to ensure that the activities will continue.

3 AMERICAN INDIANS AND ALASKA NATIVES

Len J. Paulozzi, MD, MPH and James M. Mendlein, PhD

THE POPULATION

Popular images of American Indians and Alaska Natives suggest that they are a relatively homogeneous population living on reservations in the American West or in small villages in Alaska. In reality, members of this racial group differ markedly from one another in their cultural and genetic heritages, geographic location, socio-demographic characteristics, and lifestyles.¹ Defining an American Indian or Alaska Native and determining tribal membership are potentially complicated issues because the Bureau of Indian Affairs and individual tribes use varying criteria to define membership and entitlement to certain government services.^{2,3,4} However, the Bureau of the Census and a number of other federal agencies rely on self-identification for classifying a person as an American Indian or Alaska Native and for identifying tribal membership (Appendix A).

POPULATION SIZE AND GROWTH

American Indians and Alaska Natives numbered about two million persons in 1990, or less than one percent of the U.S. population. Approximately 3.5 times this number of Americans have at least one American Indian or Alaska Native ancestor. Despite a 38 percent increase between 1980 and 1990 in the number of people who identified themselves as American Indians or Alaska Natives, this racial category remains the

smallest minority group in the United States. The increase in the reported American Indian and Alaska Native populations between 1980 and 1990 is not due to natural causes alone. People changing their self-identification from other races to American Indian or Alaska Native during this period and improvements in methodology for counting people who live on reservations, on trust lands, and in Alaska Native villages may also have contributed to the increase.⁵ The American Indian and Alaska Native population is expected to increase from the current 0.8 percent to 1.2 percent of the U.S. population by the year 2050.⁶

In 1990, American Indians made up about 96 percent of this minority group. About 16 percent of American Indians identified themselves as Cherokee, 12 percent as Navajo, 6 percent each as Chippewa and Sioux, and 4 percent as Choctaw. The next five largest tribes were the Pueblo, Apache, Iroquois Confederacy, Lumbee, and Creek. Most tribes had fewer than 10,000 members in 1990.

The terms American Indians and Alaska Natives are not mutually exclusive. For census purposes, six tribes are considered Alaska Natives: Eskimos, Aleuts, Alaskan Athabaskan, Tlingit, Tsimshian, and Haida. Anthropologists, however, categorize all but the Eskimos and Aleuts as American Indians. Of the nearly 86,000 Alaska Natives enumerated in Alaska in 1990, slightly over half were Eskimos, about 12

percent were Aleuts, and about 37 percent were American Indians.⁵

Non-Hispanic American Indians and Alaska Natives are much younger than non-Hispanic whites (*Figure 3.1*). For example, almost 30 percent of non-Hispanic American Indians and Alaska Natives are less than 15 years old, whereas approximately 20 percent of non-Hispanic whites are less than 15 years old. Only about 6 percent are aged 65 years or older, but approximately 14 percent of non-Hispanic whites are 65 years old or older (*Table 3.1*). Higher fertility rates, in part, account for this youthful population.

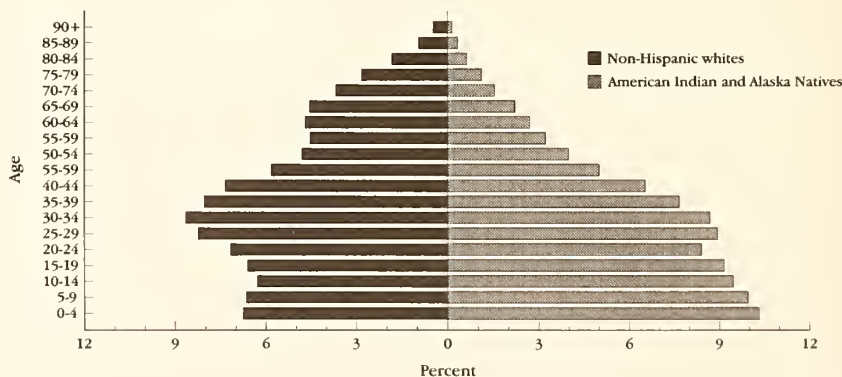
The proportion of non-Hispanic American Indian and Alaska Native males is somewhat greater than that of females through age 29 years. After age 29, slightly more women than men are in every age group (*Figure 3.2*). The ratio of the number of men per 100 women for non-Hispanic American Indians and Alaska Natives is similar to the male:female ratio for non-Hispanic whites through the 65–84 year

age group (*Table 3.2*). However, for persons in the 85+ age group, the male:female ratio is almost 50 percent higher for non-Hispanic American Indians and Alaska Natives than for non-Hispanic whites (54.8 versus 37.5).

MIGRATION PATTERNS

American Indians and Alaska Natives were the first inhabitants of North America. They migrated from Siberia across the Bering land bridge about 25,000 years ago and settled the entire Western Hemisphere over a period of 10,000 to 15,000 years.² Tribes traditionally traveled long distances for trade or in search of game. Two major periods of mass migration occurred because of contact with European explorers and their descendants. First, the transmission of infectious diseases from early European settlers devastated the American Indian population. Many of the survivors resettled in smaller, more widely separated groups. Second, increases in the non-Indian population on the East Coast created political

Figure 3.1—Age distribution of American Indian and Alaska Native and non-Hispanic white populations, United States, 1990



Source: Bureau of the Census, 1990.

Table 3.1—Age distribution of the American Indian and Alaska Native and white non-Hispanic populations, United States, 1990

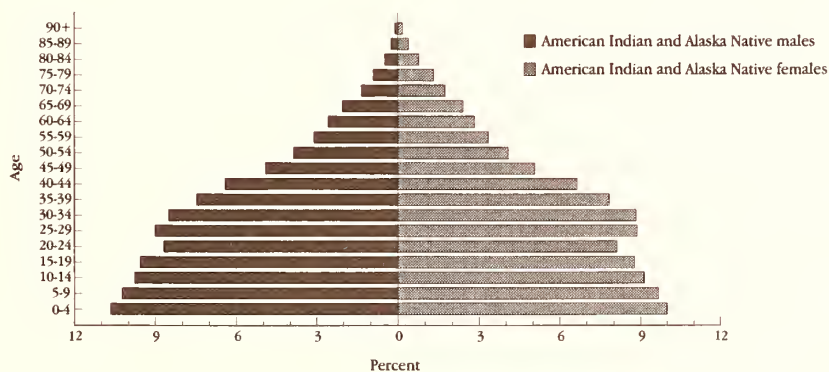
Age Group (years)	American Indians and Alaska Natives %	Whites %
<15	29.7	19.7
15–44	49.4	46.1
45–64	14.9	19.9
65–84	5.5	12.9
85+	0.5	1.4

Source: Bureau of the Census, 1990.

pressures for enactment of legislation that forced American Indians to migrate. The Indian Removal Act of 1830 opened eastern lands for settlers by moving American Indians to territories west of the Mississippi River. Later, because

hostilities between American Indians and non-Indians continued, the federal tribal reservation system was established. By 1887, most American Indians were resettled on reservations or in the Indian territory of Oklahoma.

Figure 3.2—Age distribution of American Indian and Alaska Native males and females, United States, 1990



Source: Bureau of the Census, 1990.

Table 3.2—Age-specific male:female ratios for the American Indian and Alaska Native and white non-Hispanic populations, United States, 1990*

Age Group (years)	American Indians and Alaska Natives	Whites
< 15	103.5	105.7
15-44	98.2	101.2
45-64	91.9	94.3
65-84	73.8	71.4
85+	54.8	37.5

*The male:female ratio is the number of males per 100 females.

Source: Bureau of the Census, 1990.

After World War II, the Bureau of Indian Affairs sponsored relocation programs to encourage American Indian migration from remote reservations to urban areas to assimilate them into mainstream society and enhance their economic opportunities.

GEOGRAPHIC DISTRIBUTION

In 1990, more than half of the American Indian and Alaska Native population lived in seven states: Oklahoma, California, Arizona, New Mexico, Alaska, Washington, and North Carolina; the largest proportion resided in Oklahoma. Alaska, which has a non-Hispanic American Indian and Alaska Native population of 15.4 percent, was the only state in which the non-Hispanic American Indian and Alaska Native population composed more than 10 percent of the state population. In New Mexico, Oklahoma, and South Dakota, non-Hispanic American Indians and Alaska Natives composed 8.5, 7.8, and 7.1 percent of the state population, respectively. Nineteen states had counties in which the non-Hispanic American Indian and Alaska Native population composed over

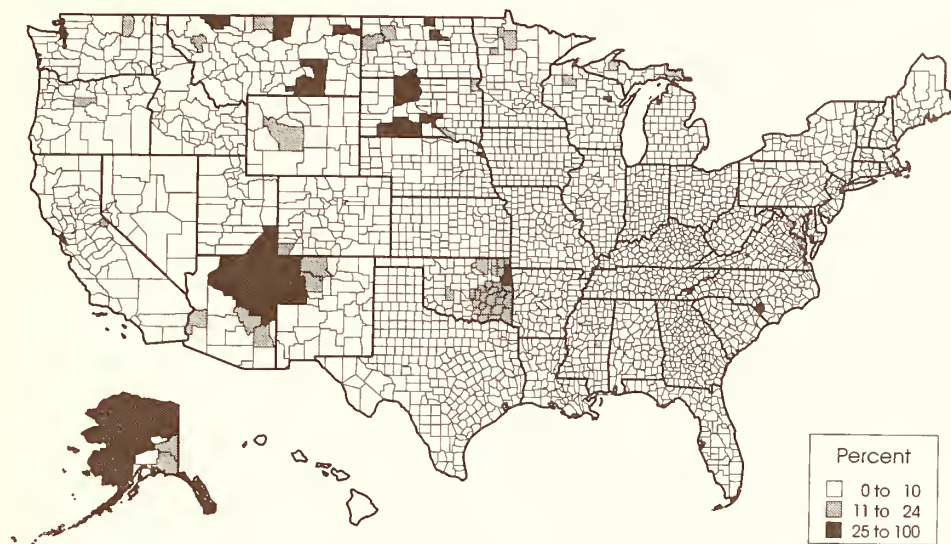
10 percent of the county population (*Figure 3.3*).

Approximately 22 percent of the American Indian and Alaska Native population live on 314 reservations and historic trust lands. The boundaries of these lands were established by treaty, statute, and executive or court order. Although another 15 percent live in tribal or village statistical areas, the majority of American Indians and Alaska Natives do not live on reservations (*Figure 3.4*).

Most American Indian reservations are not large and populous. The Navajo reservation, which overlaps the states of Arizona, New Mexico, and Utah, is the largest in size (14 million acres) and population (143,405 in 1990). The next largest, Pine Ridge, South Dakota, has only a tenth the population of the Navajo reservation (11,182 in 1990). The next eight largest reservations have fewer than 10,000 people each. About two-thirds of the American Indians who reside on reservations live in communities of less than 4,000 persons.

The Eskimos and Aleuts are distinguished principally by their language and geographical residence rather than by their tribal identifica-

Figure 3.3—Percentage of American Indians and Alaska Natives* in U.S. counties,† 1990

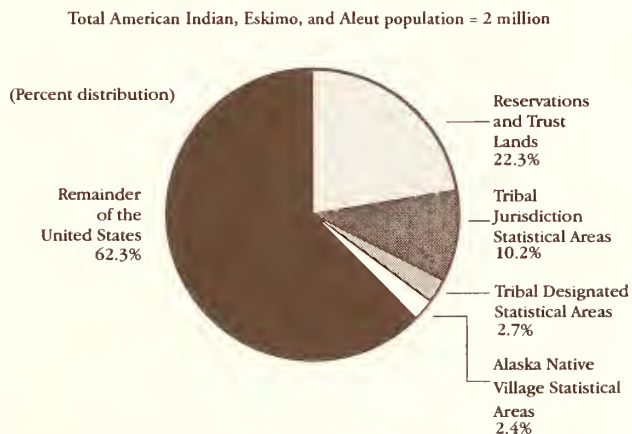


*Non-Hispanic American Indians and Alaska Natives.

†See Table A.3 in Appendix A for a list of the shaded counties.

Source: Bureau of the Census, 1990.

Figure 3.4—Type of area in which American Indians, Eskimos, and Aleuts live, United States, 1990



Source: Bureau of the Census, *We, the First Americans*, 1993.

tion.⁶ The majority of Eskimos and Aleuts live in Alaska, but some live within the contiguous United States, mainly in the Pacific coast states.⁷ The two main Eskimo groups that live in Alaska are the Inupiat, who live in the north and north-west parts, and the Yupik, who live in the south and southwest parts.

SOCIOECONOMIC INDICATORS

In 1990, a smaller percentage of American Indians and Alaska Natives had a high-school education or higher (65%) than did persons in the general U.S. population (75%); less than half as many had attained a college degree or higher (9% versus 20%). The median household income for American Indians was substantially lower than that for all races (\$19,865 versus \$30,056), and a greater percentage (32% versus 13% of all races) were below the official poverty level. Many more men (16% versus 6% of all races) and women (14% versus 6% of all races) were unemployed. On many American Indian reservations, the standard of living is similar to the Third World—poor sanitary conditions, no running water, poorly paved roads, and inadequate or substandard public facilities.²

ETHNIC DIVERSITY

The survival of American Indian and Alaska Native tribes has depended on their historic proficiency in adapting to changes in the physical and sociocultural environment. Today, the widely varied and dynamic nature of the American Indian and Alaska Native culture reflects their ability to effectively combine old and new practices. Traditional American Indian and Alaska Native lifestyles that involve religious and tribal ceremonies, community activities, and other aspects of social life still exist, particularly on tribal reservations among a concentration of family and friends. These traditions often survive side-by-side with all the manifestations

of popular American culture because American Indians and Alaska Natives have broadly assimilated modern influences in such areas as education, language, arts, religion, and other practices.

On reservations and in Alaska Native villages, native languages and English are spoken. More than 200 American Indian and Alaska Native languages are known today and more than 100 are still spoken.

HEALTH CARE

American Indians and Alaska Natives differ fundamentally from any other group in the United States because the federal government has certain legal responsibilities to the tribes and their members and because of a government-to-government relationship between the tribes and the United States. Members of federally recognized tribes and certain Indians of California are eligible for the services administered by the Indian Health Service (IHS) of the Public Health Service.^{2,3,4} The IHS health services delivery system provides a broad range of preventive, curative, rehabilitative, and environmental services directly through IHS facilities and staff in the 12 IHS service areas or through contractual arrangements, and tribes have the option to be actively involved in managing such programs. The IHS has also funded programs to increase the number of American Indian and Alaska Native health professionals and to improve health care access for American Indians and Alaska Natives who live in urban areas.

To varying degrees, American Indian and Alaska Native tribes incorporate traditional folk medicine into their healing practices and rely on current medical practice. As in ancient times, a number of tribal healing practices and folk medicines are used on some reservations by medicine men and other healers. They employ a variety of useful treatments for infectious

diseases, chronic conditions, and injuries. Dozens of native plants used medicinally have been officially recognized in the *United States Pharmacopeia*.⁸

Traditional medical practices may be based on complex cultural and empirical origins and reflect, in part, religious beliefs, superstitions, and social customs. They often involve the patient's family and tribe in the rituals and treatment. Medicine men may employ curative rituals designed to resolve conflicts between the patient and tribal or family members, thereby addressing emotional needs that may be related to the patient's sickness. The complex sociocultural beliefs that American Indians and Alaska Natives have about healing inevitably also influence their attitudes about modern medical theory and treatment modalities.

American Indians and Alaska Natives are subject to barriers to care that confront many populations who have lower socioeconomic status and who live in rural areas. Although American Indians and Alaska Natives who live on reservations and tribal members who have access to reservation health facilities are served by the IHS, many people still have problems accessing health care, particularly in certain rural areas where the availability of physicians and other health care services may be much lower than the national average.

PUBLIC HEALTH IMPLICATIONS

The fact that American Indians earn less than average Americans and tend to live in remote, rural locations means that they are more likely to experience problems obtaining not only clinical preventive services but also health education and other health promotion efforts. In many cases, these barriers are compounded by language problems. Thus, American Indians are a high-risk population for the development of chronic disease.

At the same time, however, the American Indian and Alaska Native population is relatively youthful and therefore faces significant threats from injuries, infectious diseases, and maternal and child health problems. Thus, these problems may appear to be more important than chronic diseases in the competition for scarce public health dollars.

These competing needs may best be met by comprehensive programs for youth in American Indian and Alaska Native populations. These programs should be designed to focus on primary prevention by avoiding the initiation of alcohol and tobacco use and by encouraging proper nutrition early in life. Such programs could have both immediate benefits for child and adolescent health and long-term benefits in the prevention of chronic disease among adults.

The geographic clustering of American Indians and Alaska Natives provides state and county health departments the opportunity to mount highly efficient intervention efforts tailored for the local subgroup. However, public health practice also needs to reach beyond the concentrations of American Indians and Alaska Natives on reservations and tribal statistical areas to include those living in urban areas.

CONCLUSION

American Indians and Alaska Natives are much more diverse than their stereotypes suggest. Their lives reflect both their cultural heritage and the necessary adaptations they have made. The consequences of these traditions and adaptations can be seen in the following sections that deal with the life expectancy, mortality, morbidity, health status, and health behaviors among persons in the American Indian and Alaska Native population.

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LIFE EXPECTANCY

Life expectancy at birth is the primary measure used to express the number of years a newborn child can expect to live given the prevailing

mortality pattern. In 1940, American Indians and Alaska Natives had a life expectancy at birth of 51.0 years and the U.S. white population had a life expectancy at birth of 64.2 years¹ (Appendix B). From 1973-1987, the life expectancy at birth of American Indians and Alaska Natives increased 10.5 years from 61.1 to 71.6 years (76.2 years for females and 67.2 years for males). Over the same time period, U.S. whites experienced a 3.4 year increase in life expectancy. Despite this gain, American Indians and Alaska Natives still had a lower life expectancy in 1987 at birth than did whites (71.6 years versus 75.6 years).²

Some evidence suggests that the gap in life expectancy between American Indians and whites may be even greater than these numbers indicate. Some IHS service areas may underreport Indian race on death certificates. Excluding these areas reduces overall American Indian and Alaska Native life expectancy by two years.³ The true life expectancy in this population at birth may therefore still be less than 70 years.

American Indians and Alaska Natives experience lower life expectancy primarily because of higher mortality rates for persons under 45 years old. These higher rates result principally from excess mortality from intentional and unintentional injuries, not from chronic diseases. Life expectancy after age 45 years should, in fact, be better among American Indians and Alaska Natives given their overall lower mortality rate from chronic disease. The specific role of the chronic diseases that exert a major impact on longevity among American Indians and Alaska Natives is examined from the perspective of mortality rates in the next section.

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MORTALITY

The following section presents age-specific and age-adjusted 1990 mortality rates by sex for American Indian and Alaska Native adults and white adults for ten chronic diseases: chronic obstructive pulmonary disease (COPD), cirrhosis, colorectal cancer, diabetes, ischemic heart disease (IHD), lung cancer, stroke, breast cancer and cervical cancer among women, and prostate cancer among men (Appendix C).

The mortality rates for American Indian and Alaska Natives are based on death certificate identification of the decedent as a member of this minority. Unfortunately, as has been demonstrated for infant deaths,¹ the incidence of cancer,² and end-stage renal disease,³ American Indians are frequently misclassified as white on death certificates. This misclassification artificially reduces the mortality rates for persons in this population. Thus, mortality rates from chronic diseases for persons in this minority group must be interpreted with caution. The relative importance of mortality rates from specific chronic diseases, or their rank order, may be much more reliable than their absolute magnitude.

AGE-SPECIFIC MORTALITY RATES

Women. IHD is the leading cause of death for American Indian and Alaska Native women aged 45–64 years and for women aged 65 years and older (Table 3.3). The leading causes of death from chronic diseases differed for American Indian and Alaska Native women and white women aged 45–64 years primarily in the

higher ranking and higher rates of cirrhosis and diabetes among women in the minority population. This difference is partly due to dramatically higher mortality rates from these two conditions and partly due to lower mortality rates from the selected cancers in this population. Diabetes also ranks higher for American Indian and Alaska Native women aged 65 years and older than for white women in the same age group (third versus seventh).

Men. IHD is also the leading cause of death for American Indian and Alaska Native men aged 45–64 years and for men aged 65 years and older (Table 3.4). For men in the 45–64 age category, cirrhosis is the second leading cause of death among American Indians and Alaska Natives and the third leading cause of death for whites. However, the mortality rate due to cirrhosis is about twice as high for American Indian and Alaska Native men as that for white men. Lung cancer is the third leading cause of death among American Indians and Alaska Natives and the second leading cause of death for whites. However, the mortality rate due to lung cancer is over twice as high for white men as for American Indian and Alaska Native men. Diabetes ranked higher as a leading cause of death among American Indian and Alaska Native men than among white men in both age groups.

Comparison of men and women. The three leading causes of death from chronic disease are cirrhosis, IHD, and stroke among American Indian and Alaska Native males and females aged 15–44 years. The leading causes among white males and females in this age group are IHD, cirrhosis, and breast cancer (data not shown).

IHD is the leading cause of death for both men and women in the 45–64 age group and in the 65+ age group, and cirrhosis is the second leading cause of death for both men and women in the 45–64 year age group. Stroke and diabetes

Table 3.3—Rank order of age-specific crude mortality rates* for major chronic diseases as underlying cause of death for American Indian and Alaska Native women and white women, United States, 1990

Persons Aged 45-64 Years		Persons Aged 65 Years and Older	
American Indian/ Alaska Native	White	American Indian/ Alaska Native	White
Ischemic heart disease (69.1)	Ischemic heart disease (75.1)	Ischemic heart disease (517.2)	Ischemic heart disease (1179.0)
Cirrhosis (43.0)	Lung cancer (68.0)	Stroke (215.5)	Stroke (420.6)
Diabetes (42.4)	Breast cancer (60.3)	Diabetes (182.8)	Lung cancer (180.7)
Lung cancer (35.2)	COPD† (24.1)	COPD† (93.6)	COPD† (176.8)
Breast cancer (26.1)	Stroke (24.0)	Lung cancer (86.2)	Breast cancer (135.3)
Stroke (25.4)	Colorectal cancer (20.2)	Colorectal cancer (62.4)	Colorectal cancer (120.8)
COPD† (13.7)	Diabetes (16.4)	Breast cancer (49.0)	Diabetes (106.3)
Colorectal cancer (10.4)	Cirrhosis (12.6)	Cirrhosis (44.6)	Cirrhosis (24.8)
Cervical cancer (0.7)	Cervical cancer (2.5)	Cervical cancer (8.9)	Cervical cancer (12.1)

*Rate per 100,000 persons.

†COPD—Chronic obstructive pulmonary disease.

Source: CDC, National Center for Health Statistics, National Vital Statistics System, 1990.

are the second and third leading causes of death among women 65 years old and older; lung cancer and stroke are the second and third leading causes of death among men in this same age group.

AGE-ADJUSTED MORTALITY RATES

Age-adjusted mortality rates by sex (*Figure 3.5* and *Figure 3.6*) show essentially the same patterns as the age-specific rates. The ratio of

male to female rates in the American Indian and Alaska Native population is comparable to that among whites for each condition listed except for cirrhosis and diabetes (see *Table C.2* and *C.3* in Appendix C). The sex-specific rates for cirrhosis are slightly higher among white men. The difference is much more pronounced among the American Indian and Alaska Native population. The mortality rate from diabetes is slightly higher for white men than for white women, whereas the rate is slightly less for

Table 3.4—Rank order of age-specific crude mortality rates* for major chronic diseases as underlying cause of death for American Indian and Alaska Native men and white men, United States, 1990

Persons Aged 45-64		Persons Aged 65 Years and Older	
American Indian/ Alaska Native	White	American Indian/ Alaska Native	White
Ischemic heart disease (177.3)	Ischemic heart disease (237.1)	Ischemic heart disease (838.9)	Ischemic heart disease (1584)
Cirrhosis (60.8)	Lung cancer (127.1)	Lung cancer (251.7)	Lung cancer (473.6)
Lung Cancer (54.4)	Cirrhosis (31.5)	Stroke (231.2)	Stroke (363.9)
Diabetes (43.8)	COPD† (31.3)	COPD† (225.1)	COPD† (343.1)
Stroke (24.0)	Colorectal cancer (29.4)	Diabetes (157.5)	Prostate cancer (217.5)
COPD† (17.7)	Stroke (29.2)	Prostate cancer (104.3)	Colorectal cancer (164.9)
Colorectal cancer (10.6)	Diabetes (19.5)	Cirrhosis (67.5)	Diabetes (106.3)
Prostate cancer (5.7)	Prostate cancer (12.1)	Colorectal cancer (65.5)	Cirrhosis (47.6)

*Rate per 100,000 persons.

†COPD—Chronic obstructive pulmonary disease.

Source: CDC, National Center for Health Statistics, National Vital Statistics System, 1990.

American Indian and Alaska Native men than for American Indian and Alaska Native women.

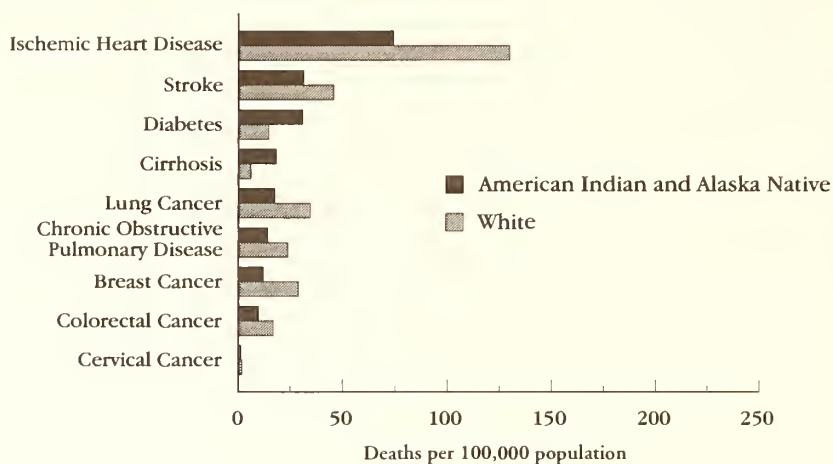
HEALTH OBJECTIVES FOR THE YEAR 2000

Lowering the mortality rates due to diabetes and to cirrhosis among American Indians and Alaska Natives are health objectives for the year 2000. The objectives are a rate of 48 per 100,000 persons for diabetes and 13 per 100,000 persons for cirrhosis.⁴

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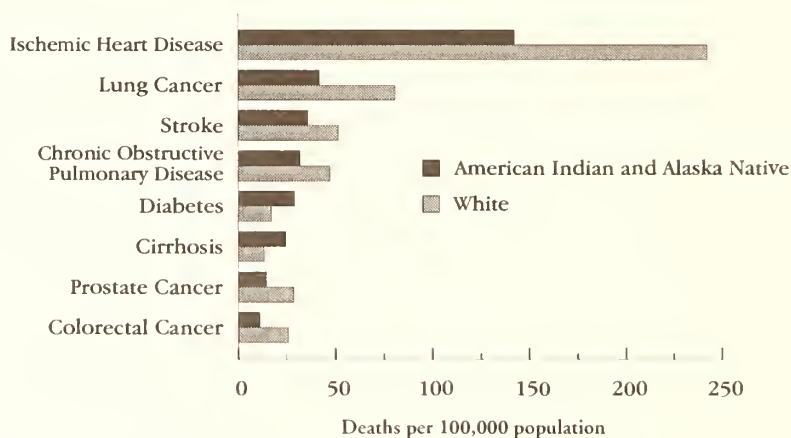
Figure 3.5—Age-adjusted cause-specific mortality rates* for American Indian and Alaska Native women and white women, by underlying cause of death, United States, 1990



*Age-adjusted to the 1980 U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

Figure 3.6—Age-adjusted cause-specific mortality rates* for American Indian and Alaska Native men and white men, by underlying cause of death, United States, 1990



*Age-adjusted to the 1980 U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

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MORBIDITY

PREVALENCE OF SELECTED CHRONIC DISEASES

Morbidity information comes from a variety of sources. The principal source is the National Health Interview Survey (NHIS). The crude and age-adjusted prevalence rates for selected chronic conditions from NHIS data from 1986-1990 (Appendix D) are presented in *Table 3.5* and *Table 3.6*. Only conditions where the sample size was large enough to generate a standard error less than 30 percent of the rate are shown. When rates are derived from other sources, the sources are specified.

IHD. The 1987 Survey of American Indians and Alaska Natives (SAIAN), a part of the National Medical Expenditure Survey,¹ was drawn from a representative sample of persons who lived on or near reservations and who were eligible for care from the IHS. Data from this survey showed that 9.8 percent of American Indians and Alaska Natives reported having cardiovascular disease. This percentage is comparable to the prevalence of 10 percent of persons in the general U.S. population.

The SAIAN data, however, is not consistent with the low rates found in IHS hospitalization data. IHS data on hospitalizations provided or funded by the IHS reveals age-adjusted hospitalization rates for major cardiovascular diseases and acute myocardial infarction (AMI) that are less than half the national rates from the National Center for Health Statistics Hospital Discharge Survey.² The highest rates were in the Northern Plains Service Area, and the lowest rates were in the Southwest Service Area. The SAIAN data are also not consistent with the markedly lower mortality rates for IHD among American

Table 3.5—Crude and age-adjusted prevalence for selected chronic conditions* for American Indian and Alaska Native women and white women, United States, 1986-1990

Condition	Crude Prevalence		Age-adjusted Prevalence	
	American Indian/ Alaska Native %	White %	American Indian/ Alaska Native %	White %
Hypertension	13.45	12.57	13.82	10.96
Chronic bronchitis	8.01	6.32	7.76	6.23
Asthma	6.12	4.30	6.02	4.30
Diabetes	4.41	2.67	5.04	2.36

*Prevalence data on ischemic heart disease, stroke, emphysema, and liver diseases were calculated but are not presented since the relative standard error for American Indian/Alaska Native women for these diseases was greater than 30 percent.

Source: CDC, NCHS, National Health Interview Survey, 1986-1990.

Table 3.6—Crude and age-adjusted prevalence for selected chronic conditions* for American Indian and Alaska Native men and white men, United States, 1986–1990

Condition	Crude Prevalence		Age-adjusted Prevalence	
	American Indian/ Alaska Native %	White %	American Indian/ Alaska Native %	White %
Hypertension	9.39	10.64	10.29	10.32
Chronic bronchitis	4.45	4.33	4.39	4.42
Asthma	4.22	4.14	4.45	4.26

*Prevalence data on diabetes ischemic heart disease, stroke, emphysema, and liver diseases were calculated but are not presented since the relative standard error for American Indian and Alaska Native men for these diseases was greater than 30 percent.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

Indians and Alaska Natives. The preponderance of evidence, therefore, suggests that the rates of IHD for this minority are lower than the rates for whites.

Stroke. The IHS age-adjusted hospitalization rates for stroke are 52 percent of the comparable rates in the overall U.S. population.³ Only the Aberdeen Service Area has a discharge rate that exceeds the U.S. population. Four of the five highest rates are found in service areas in the Northern Plains. The exception is the Alaska Service Area, which has a relatively high rate of stroke but the second lowest rate of AMI of all the IHS service areas.

Hypertension. NHIS data shows that the self-reported, age-adjusted prevalences of hypertension are comparable for American Indian and white men and higher for American Indian women than for white women. These results differ from those from two other studies. The 1987 SAIAN found comparable rates among both men and women.¹ A study by the IHS³ reported lower rates of diagnosed hypertension for American Indians and Alaska Natives who were eligible for IHS services than did the

NHIS for whites. The IHS study showed an age-adjusted prevalence of 10.9 percent among persons aged 15 years and older with a range from 6.8 percent in Alaska to 17.0 percent in Bemidji, Minnesota service area. The IHS study, however, was based on a review of one year of ambulatory care records, rather than on self-reports; the authors believe this method underestimates the true prevalence of hypertension among persons in the minority population. Some of the discrepancy may also result from the fact that the IHS study only considers the IHS service population, which is roughly half of the population that identifies itself as American Indian or Alaska Native in the censuses.

Diabetes mellitus. For unknown reasons, American Indians are predisposed to diabetes. One population, the Pima Indians, has the highest recorded prevalence of diabetes—around 50 percent—in the world.⁴ The NHIS data for American Indians and Alaska Natives show an overall age-adjusted prevalence of five percent for women. This prevalence is roughly twice that for white women. A study that used the IHS outpatient database reported the prevalence

of diabetes for both sexes combined to be 6.9 percent, or nearly three times the U.S. rate that was derived from the NHIS.⁵ The IHS study also provided prevalence estimates for individual service areas ranging from 1.5 percent in Alaska to 11.9 percent in the Tucson, Arizona area. All IHS areas except Alaska had rates in excess of the rate for the general U.S. population. These regional estimates are comparable to other published studies that used a wide variety of methods.⁶⁻⁸ Finally, data from the Behavioral Risk Factor Surveillance System (BRFSS) from 1991–1992, which includes 822 American Indian and Alaska Native men and 989 women aged 18 years and older, indicate a prevalence of diabetes of 4.2 percent among men and 9.0 percent among women. These numbers are consistent with the IHS estimate. The advantage of the BRFSS estimate is that it includes many who may not be part of the IHS service population.

Reducing diabetes among American Indians and Alaska Natives to a prevalence of 6.2 percent or less is a health objective for the year 2000.⁹

Chronic liver disease. Chronic liver disease is generally the result of long-term alcohol abuse. The proportion of hospital discharges listing diagnoses related to alcohol abuse is 2.5 times greater among American Indians and Alaska Natives than among persons in the total U.S. population.¹⁰ These results are consistent with the elevated mortality from chronic liver disease among American Indians and Alaska Natives.

Emphysema, chronic bronchitis, and asthma. IHS hospitalization rates from COPD are less than half those in the general U.S. population.¹¹ This finding is compatible with the lower mortality rates from this condition among American Indians and Alaska Natives. However, the finding is inconsistent with comparable or higher rates of cigarette smoking among persons in this population because smoking accounts for

the majority of COPD. It is also inconsistent with the fact that self-reported rates of asthma and chronic bronchitis among both American Indian and Alaska Native men and women who participated in the NHIS are at least as high as those among whites.

This discrepancy between mortality or hospitalization rates and disease prevalence can be explained if American Indians adopted smoking later in this century than did whites. If this is true, most smokers in this minority may not have been smoking long enough to experience the serious consequences of prolonged tobacco use, such as hospitalization and death from pulmonary disease.

CANCER INCIDENCE AND SURVIVAL

The overall reported incidence of cancer among American Indians is roughly half that of whites whether incidence is estimated from New Mexico's Surveillance, Epidemiology, and End Results (SEER) registry data¹² or from the Indian Health Service hospital discharge data.¹³ In only four sites—the stomach, gallbladder, kidney, and uterine cervix—do American Indians have rates greater than those among whites. The reason SEER rates are lower for American Indians than for whites may at least in part be racial misclassification of some Indians as non-Indians.^{14,15}

In contrast, Alaska Natives have overall cancer incidence rates closer to those for whites. A rate of 314 per 100,000 persons for all cancer sites combined was reported from the Alaska Native Tumor Registry from 1969–1983.¹⁶ The IHS reported a similar overall rate from Alaskan hospitalization data from 1980 through 1987. The comparable rate of 859 per 100,000 persons was found among whites in the aggregate SEER data from 1977–1983. Alaska Natives also have the highest rates of any racial group for cancers of the oral cavity and pharynx, colon and rectum, uterine cervix, and kidney.

Among all IHS service areas in the lower 48 states, persons who live in areas located in the Northern Plains states (Aberdeen, South Dakota, Bemidji, Minnesota, and Billings, Montana) have higher rates of hospitalization for cancer, whereas persons who live in areas in the Southwest and in the Portland Area have lower rates. The difference between the highest and lowest areas is roughly twofold.

The hospitalization data from the IHS indicate a greater cancer incidence among American Indian and Alaska Native women (173.2 per 100,000 persons) than among men (142.1 per 100,000 persons), whereas the SEER data show a clear excess in cancer incidence among white men. The deficit in cancer incidence among American Indian men is due primarily to the much lower rates of cancer at major sites, such as the lung, colon, prostate, and bladder.

The 5-year relative survival rates for cancer of all sites for American Indians from 1975–1984 in New Mexico and Arizona was 35 percent, whereas the 5-year relative survival rate for whites was 50 percent.¹² American Indians had the lowest relative survival of any minority group for all the cancer sites examined except for cancers of the ovary and the cervix.

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HEALTH-RELATED QUALITY OF LIFE

The goals of chronic disease prevention and control are to reduce the incidence of disease, reduce the severity of illness, delay the onset of disability, and increase the span of healthy life. Thus, population-based measures of respondent-assessed health status and limitation of activity due to chronic conditions, together with measures of mortality and morbidity, are important for monitoring the total health burden from chronic diseases. In this section, data from the NHIS are used to describe respondent-assessed health status and limitation of major activities due to chronic conditions (Appendix E). In an effort to evaluate the collective impact of the eight self-reported chronic conditions examined in the previous section on respondent-assessed health status and on limitation of activity due to chronic conditions, the prevalence of these outcome measures was calculated for the subgroup of respondents reporting one or more of the eight conditions: hypertension, asthma, diabetes, chronic bronchitis, IHD, stroke, emphysema, and liver disease.

RESPONDENT-ASSESSED HEALTH STATUS

The percentage of American Indian and Alaska Native women who reported fair or poor health increased with age and with the presence of one or more of the selected chronic conditions (*Figure 3.7*). A higher percentage of American Indian and Alaska Native women than white women reported fair or poor health status at all age groups. The same pattern exists within the subgroup that reported one or more of the eight chronic conditions. The only difference was found among white women in the 45–64 age group who were more likely to report fair or poor health status than were American Indian and Alaska Native women in the same age group.

The same patterns exist among men: American Indian and Alaska Native men were more likely than white men to report fair or poor health at all age groups for the total sample and for the group with selected chronic diseases.

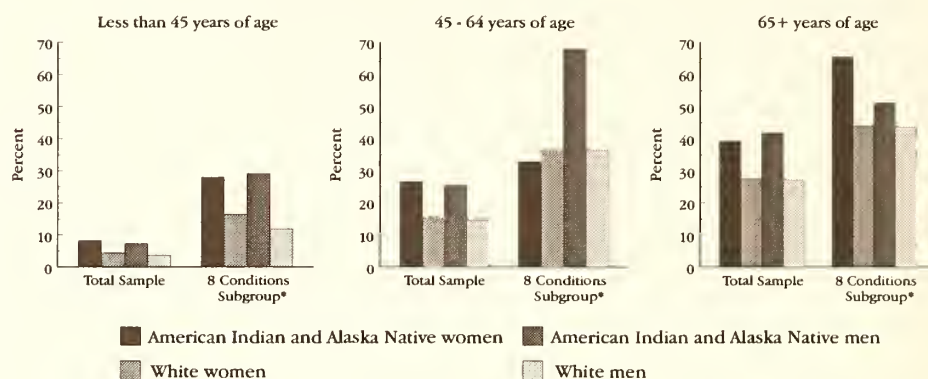
Men and women in the minority group reported similar prevalences of fair or poor health at all age groups for the total sample. For persons in the subsample who reported having chronic diseases, the prevalences are similar for men and women under 45 years old, much greater for men in the 45–64 age group, and greater for women in the 65+ age group.

LIMITATION IN ACTIVITIES DUE TO CHRONIC CONDITIONS

The percentage of American Indian and Alaska Native women who reported limitation in their daily activity due to chronic conditions increased after age 44 years (*Figure 3.8*). This percentage, however, does not increase noticeably for women aged 65 years and older.

As with health status, the presence of one or more of the selected chronic conditions corresponds to a greater likelihood of limitation of activity for all three age groups.

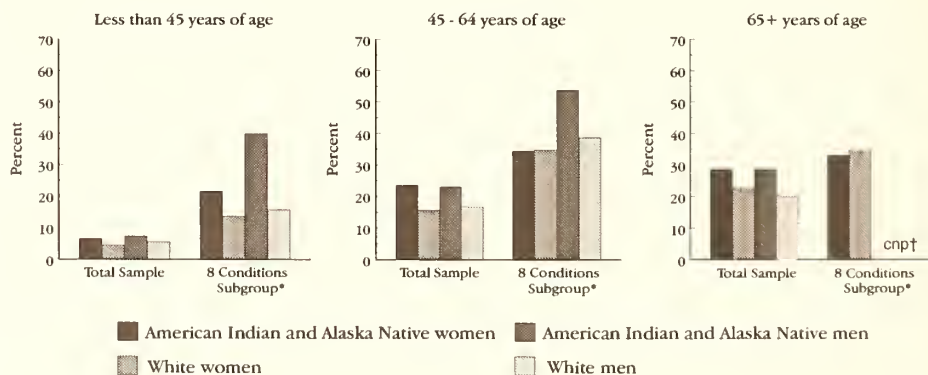
Figure 3.7—Age-specific prevalence of self-reported fair or poor health status among American Indian and Alaska Native adults and white adults, by type of sample, United States, 1986–1990



*Persons who reported any of the following conditions: hypertension, asthma, diabetes, chronic bronchitis, ischemic heart disease, stroke, emphysema, liver diseases.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

Figure 3.8—Age-specific prevalence of self-reported limitation of activity because of chronic conditions among American Indians and Alaska Native adults and white adults, by type of sample, United States, 1986–1990



cnp—comparison not possible because of the small number of American Indian and Alaska Native men.

†Persons who reported any of the following conditions: hypertension, asthma, diabetes, chronic bronchitis, ischemic heart disease, stroke, emphysema, liver diseases.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

A higher percentage of American Indians and Alaska Native women in the chronic conditions subgroup who were less than 45 years old reported limitations in their daily activity than did their white counterparts. This finding was not true for American Indian and Alaska Native women in the older age groups.

Limitations in activity also increased with age and in the presence of selected chronic conditions among men. American Indian and Alaska Native men were more likely to report limitations than were white men at all age groups for the total sample and for the group with selected chronic conditions.

Men and women in the minority group reported similar prevalences of limitation of activity at all age groups for the total sample. For the subsample with chronic conditions, the male prevalence figures exceed those among females, at least for those age groups with adequate sample sizes.

PUBLIC HEALTH IMPLICATIONS

The greater likelihood of fair or poor health status and activity limitation due to chronic conditions among American Indians and Alaska Natives reflects a higher prevalence of chronic conditions overall in this minority. In the subsample of those with selected chronic conditions, however, the discrepancy may reflect poorer management of these chronic conditions.

RISK FACTORS AND PREVENTIVE HEALTH PRACTICES

Morbidity and mortality statistics on chronic diseases reflect the cumulative effects of health behaviors, such as smoking, that may have begun decades before the onset of disease or death. More recent information on these health-related behaviors is thus essential for projecting

future trends in morbidity and mortality. Because altering these behaviors is the primary route to prevention of chronic disease, such information is also necessary to identify the target populations that would benefit from disease prevention programs.

Contemporary information on health-related behaviors among American Indians and Alaska Natives is available from the BRFSS (Appendix F). Because of its design, the BRFSS can provide weighted prevalence estimates for this minority from a random sample of its members with telephones nationwide. Data from the census suggest that 77 percent of American Indian and Alaska Native households have telephones and that 96 percent of white households have telephones.¹

DESCRIPTION OF THE SAMPLE

A total of 180,255 persons responded to the BRFSS during 1991 or 1992; of these, 1,811 (1.0%) selected Aleutian, Eskimo, or American Indian when asked "What is your race?" Fifty-five percent of the sample were women (*Table 3.7*). The American Indian and Alaska Native sample was younger, had fewer years of education, and had lower incomes than did the white sample for both men and women. The mean age was 41.0 for American Indians and Alaska Natives and 44.3 for whites.

RISK FACTORS

Nearly 40 percent of American Indian and Alaska Native adult men reported smoking. This percentage is 1.6 times the prevalence for white adult men (*Table 3.8*). The prevalence was as high as 44 percent among American Indian and Alaska Native men aged 18–44 years old. The male:female ratio for American Indians and Alaska Native smokers was 1.4 and for white smokers 1.1. American Indians and Alaska

Table 3.7—Sample size and percentages for demographic variables for American Indian and Alaska Native adults and white adults aged 18 years and over, United States,* 1991–1992

Characteristic	Women				Men			
	American Indian/ Alaska Native		White		American Indian/ Alaska Native		White	
	sample size	weighted estimate %	sample size	weighted estimate %	sample size	weighted estimate %	sample size	weighted estimate %
Number	989		90,369		822		67,444	
Age (years)								
18–44	641	61.2	46,548	54.5	505	66.1	38,672	59.3
45–64	230	25.2	23,159	25.2	227	24.9	17,978	25.8
65+	118	13.6	20,662	20.3	90	9.0	10,794	14.9
Education (years)								
< 12	250	25.0	13,841	14.8	225	25.1	09,404	14.4
12	353	36.9	31,877	36.3	307	35.1	21,493	32.2
> 12	384	38.0	44,490	48.7	288	39.7	36,466	53.3
refused	2	0.1	161	0.2	2	0.1	81	0.1
Annual Household Income								
<\$10,000	264	27.9	13,807	12.9	160	18.7	05,652	7.9
\$10,000–\$20,000	234	19.1	18,221	18.9	209	23.4	11,953	6.6
>\$20,000	381	41.5	46,250	54.6	385	48.4	43,228	65.3
unknown/refused	110	11.6	12,091	13.6	068	9.5	06,611	10.1

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).
Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

Natives smoked 22.3 cigarettes per day, and whites smoked 20.7 cigarettes per day. American Indian and Alaska native men were less likely to report a sedentary lifestyle than were white men, but American Indian and Alaska Native women were more likely to report a sedentary lifestyle than were white women.

Chronic alcohol consumption was similar for American Indian and Alaska Native men and for

white men. The sample size for women was too small to make a comparison. The prevalence of binge drinking for both men and women was 12 to 13 percent higher for American Indian and Alaska Natives than for whites. American Indian and Alaska Native men were over three times more likely to report binge drinking than were American Indian and Alaska Native women.

Table 3.8—Year 2000 targets and prevalences of selected self-reported risk factors among American Indian and Alaska Native adults and white adults aged 18 years and older, United States,* 1991–1992

Risk Factor	Year 2000 Target [†]	Women		White		Men		White	
		American Indian/ Alaska Native		American Indian/ Alaska Native		American Indian/ Alaska Native		American Indian/ Alaska Native	
		%	(SE) [‡]	%	(SE) [‡]	%	(SE) [‡]	%	(SE) [‡]
Cigarette smoking [§]	≤ 15%	28.7	(2.50)	21.6	(0.20)	39.9	(3.00)	24.5	(0.25)
Sedentary lifestyle	— ^{**}	64.1	(2.62)	56.4	(0.25)	50.8	(3.04)	56.2	(0.29)
Alcohol use chronic drinking [¶]	— ^{**}	—		1.1	(0.06)	6.9	(1.42)	6.7	(0.15)
binge drinking ^{††}	— ^{**}	8.5	(1.36)	7.5	(0.14)	25.9	(2.61)	23.1	(0.25)
Overweight ^{‡‡}	≤ 20%	30.3	(2.52)	21.7	(0.21)	33.8	(2.97)	24.8	(0.26)
High cholesterol ^{§§}	— ^{**}	28.8	(3.49)	27.0	(0.25)	26.2	(3.52)	25.8	(0.31)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]*Healthy People 2000*: specific targets given in objective 3.4 (cigarette smoking) and 2.3 (overweight).

[‡]Standard error.

[§]Cigarette smoking—ever smoked 100 cigarettes and currently smoke regularly.

^{||}Sedentary lifestyle—fewer than three 20-minute sessions of leisure-time physical activity per week.

[¶]Chronic drinking—60 or more drinks of alcohol during the past month.

^{**}Year 2000 targets do not match standard BRFSS variables.

^{††}Binge drinking—consumption of five or more alcoholic beverages on at least one occasion during the past month.

^{‡‡}Overweight—body mass index ≥ 27.8 for men and ≥ 27.3 for women (body mass index=weight in kilograms divided by height in meters squared [BMI=kg/(m)²]).

^{§§}High cholesterol awareness—respondents ever told by a health professional that their cholesterol is elevated.

^{|||}Unstable estimate based on less than 50 observations.

Sources: CDC, Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

Men and women in the minority group were 36 to 40 percent more likely than whites to report being overweight. Men were more likely to be overweight than were women.

PREVENTIVE HEALTH PRACTICES

The BRFSS data showed no major differences between the American Indian and Alaska Native and white populations in their use of clinical

preventive services (*Tables 3.9 and 3.10*). American Indian and Alaska Native adults were less likely to report having their cholesterol checked within the past 5 years.

ACCESS TO HEALTH CARE

Barriers to accessing health care were more commonly reported among members of the minority population (*Table 3.11*). A higher

Table 3.9—Year 2000 targets and the prevalences of self-reported preventive health practices recommended in Healthy People 2000 for American Indian and Alaska Native adults and white adults aged 18 years and older, by sex, United States, 1991–1992*

	Year 2000 Target [†]	Women		Men	
		American Indian/ Alaska Native	White	American Indian/ Alaska Native	White
Health Practice		% (SE) [‡]	% (SE) [‡]	% (SE) [‡]	% (SE) [‡]
Current cigarette smokers: quit at least one day in past year	≥ 50%	56.7 (4.98)	50.0 (0.53)	60.2 (4.80)	51.0 (0.57)
Blood pressure checked within past 2 years	— [§]	95.0 (1.21)	96.4 (0.10)	90.9 (1.75)	92.7 (0.16)
Cholesterol checked within past 5 years	≥ 75%	62.0 (2.77)	69.3 (0.24)	58.6 (2.91)	63.5 (0.29)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]*Healthy People 2000*: specific targets for U.S. population given in objective 3.6 (quit cigarette smoking at least one day) and objective 15.14 (have cholesterol checked).

[‡]Standard error.

[§]The objective for measuring blood pressure (objective 15.13) has two parts: having blood pressure measured within the preceding two years and being able to state whether their blood pressure is normal or high. The BRFSS survey cannot answer the second part of the objective. The target goal for the objective is 90%.

Source: Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

percentage of American Indians and Alaska Natives than whites reported never having had a routine checkup, having no health care plan, and not being able to see a doctor because of the cost. Yet, relatively high percentages of American Indians and Alaska Natives with health care plans have coverage for preventive services.

STRENGTHS AND LIMITATIONS OF THE DATA

The strengths of the 1991–1992 BRFSS data are that nearly all the states are represented and that all of the states with significant American Indian and Alaska Native populations are

included. One weakness of BRFSS data is that it represents only the population with telephones. Nationwide, the prevalence of residential telephones is high enough to make this a minor issue (Appendix F). However, only three of four American Indians and Alaska Native families own telephones. Some evidence indicates that this fraction is even lower for American Indians on reservations.² Therefore, the survey results should be interpreted with care.

Perhaps because of underrepresentation of the poorest members of this minority, who may bear the greatest burden of disease, the BRFSS results are difficult to reconcile with rates of

Table 3.10—Year 2000 targets and self-reported prevalence of breast and cervical cancer screening among American Indian and Alaska Native women and white women, United States,* 1991–1992

Screening Practice	Year 2000 Target [†]	American Indian/ Alaska Native		White	
		%	(SE) [‡]	%	(SE) [‡]
Women aged 18 years and older:					
ever had a Pap smear [§]	≥ 95%	70.7	(2.72)	72.5	(0.23)
had within the preceding 2 years [§]		61.2	(2.86)	62.3	(0.25)
Women aged 40 years and older:					
ever had a clinical breast examination and mammogram	≥ 80%	72.6	(3.63)	70.7	(0.31)
Women aged 50 and older:					
Had a clinical breast examination and mammogram within the preceding 2 years	≥ 60%	60.7	(5.09)	57.7	(0.39)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]Screening practices recommended in *Healthy People 2000*: specific targets given in objective 16.12 (Pap smear) and objective 16.11 (clinical breast examination and mammogram).

[‡]Standard error.

[§]For women with an intact uterine cervix.

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

disease in the population. For example, mortality and hospitalization rates for cirrhosis among men are much higher for the minority population than for whites, but the rates of alcohol consumption among males in the BRFSS are comparable. The behavioral prevalences are probably underestimates of the true risk levels in the American Indian and Alaska Native population.

PUBLIC HEALTH IMPLICATIONS

Year 2000 targets for smoking and overweight were set at higher, or more lenient levels, for the American Indian and Alaska Native population than for the total U.S. population. This decision was made in recognition of this population's higher baseline risk levels. The year 2000 target

for cigarette smoking is set at no more than 15 percent for the total population and at no more than 20 percent for the American Indian and Alaska Native population. The target for overweight is set at no more than 20 percent of the total U.S. population and at no more than 30 percent for the American Indian and Alaska Native population. The more lenient levels put the year 2000 targets within reach. Reaching these target levels, however, will still be difficult and require tailored interventions for weight reduction, smoking prevention, and smoking cessation. Even if risk levels for overweight and smoking are reduced today, American Indians and Alaska Natives may actually experience increasing rates of cardiovascular disease, pulmonary disease, and cancer in coming years due

Table 3.11—Prevalences of self-reported routine checkup and access to care among American Indian and Alaska Native adults and white adults aged 18 years and older, by sex, United States,* 1991–1992

Indicator	Women				Men			
	American Indian/ Alaska Native		White		American Indian/ Alaska Native		White	
	%	(SE) [†]	%	(SE) [†]	%	(SE) [†]	%	(SE) [†]
Routine checkup within the past year [‡]	78.2	(2.27)	77.0	(0.21)	64.8	(2.87)	61.6	(0.29)
More than one year/ less than 2 years	7.3	(1.38)	10.4	(0.15)	12.2	(1.94) ¹	4.2	(0.20)
More than 5 years ago	4.3	(1.01)	5.3	(0.12)	11.0	(1.93)	11.1	(0.18)
Never had routine checkup	4.9	(1.46)	1.8	(0.07)	4.9	(1.22)	3.0	(0.11)
Unable to see a doctor during preceding year because of the cost [§]	22.6	(2.33)	14.3	(0.18)	18.7	(2.54)	9.5	(0.18)
Lack of health care plan	24.8	(2.43)	12.5	(0.18)	33.2	(3.03)	15.1	(0.23)
Health plan does not cover checkups or other preventive services ^f	10.2	(1.84)	19.9	(0.21)	15.6	(2.67)	19.3	(0.24)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]Standard error.

[‡]About how long has it been since you last visited a doctor for a routine checkup?

[§]Was there a time during the last 12 months when you needed to see a doctor, but could not because of the cost?

^{||}Do you have any kind of health care plan? (Health care plan was described as health insurance, prepaid plans such as health maintenance organization (HMO), or government plans, such as Medicare.)

^fWhen you are not sick, does your health care plan cover all, most, some, or none of your checkups or other preventive services?

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

to the latency period between exposure to a risk factor and disease. For example, rates of lung cancer among whites continued to increase long after smoking levels had declined.

At the same time, this information is not equally valid for all groups of this minority.

American Indians who lived on reservations and in large cities may differ dramatically in their risk profiles. Additionally, an IHS study has identified twofold or greater differences in behavioral prevalences among American Indians in different service areas.² For example, the

prevalence of smoking in this study was 18 percent in the Southwestern service areas and 48 percent in the Plains service areas.

Interventions should focus on social change on reservations and other areas where large concentrations of the target population are found. Examples would be tribal initiatives to increase the tax on liquor and cigarettes, as have already been adopted on some reservations.

Further study of the reported barriers to care is appropriate given the Indian Health Service's commitment to providing care to Indians who live on or near reservations. The rates for routine checkups in the past year and usage of cancer screening tests are not consistent with the relatively high proportions that report no health insurance and inability to see providers because of cost. Separate surveys are needed of American Indians and Alaska Natives who receive care from the Indian Health Service and of those who do not.

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SUMMARY

In the last census almost two million Americans identified themselves as American Indian or Alaska Native—1.9 million as American Indian and 81,000 as Alaska Native. Although the number of American Indians and Alaska Natives increased dramatically during the 1980s (primarily because people changed their self-

identification), this group remains less than one percent of the U.S. population. About half of the population lives in urban centers; a third lives on reservations. One in seven American Indians resides in Oklahoma.

American Indians and Alaska Natives are younger, less likely to have a college degree, more likely to live below the poverty level, more likely to live in rural areas, and less likely to have a telephone than are persons in the general U.S. population. Those who reside on or near reservations may receive care from the IHS.

Patterns of chronic disease and their risk factors reflect the gradual intermixing of traditional lifestyles with those of European settlers of North America and their descendants. Mortality rates from diseases such as lung cancer and COPD are lower among persons in this minority population than among whites, but the rates are much higher than they were before American Indians and Alaska Natives adopted smoking. Mortality patterns also reflect the special vulnerability of this population to death from diabetes and cirrhosis—the rates from these diseases dramatically exceed the rates for white.

In general, information on the incidence and prevalence of chronic disease is consistent with mortality rates for American Indians and Alaska Natives. American Indians have lower incidence rates of cancer than do whites, whereas the rates for Alaska Natives are comparable to the rates for whites. This is particularly true for tobacco-related cancers. On the other hand, this minority has above average rates for cancers of the stomach, gallbladder, uterine cervix, and kidney. Cardiovascular disease and COPD rates are also low, but the rates of diabetes and chronic liver disease are high.

Despite overall lower mortality and morbidity rates, American Indians and Alaska Natives are clearly at a disadvantage in two areas. First,

they more commonly report fair or poor health status and limitations in activity than do whites. This finding may be because these measures are crude reflections of the burden of chronic disease or because such chronic diseases are not as well controlled in this population. Second, the rates of smoking and obesity for American Indians and Alaska Natives are 1.6 and 1.4 times higher, respectively, than those for whites. None of the rates for the other behavioral risks are lower for persons in the minority population than for whites.

PUBLIC HEALTH IMPLICATIONS

In the past, the lifestyles of American Indians and Alaska Natives may have been healthier than the typical lifestyle of people in the United States today. The abuse of alcohol and tobacco was rare, activity levels were higher, and obesity was uncommon. Risk factors for chronic disease subsequently became more common among whites and American Indians and Alaska Natives, but the change has occurred more recently among persons in the minority group. This change may be attributable to their relative isolation in the West and in Alaska. At the same time, the education and income of American Indians and Alaska Natives have failed to keep pace with those of whites. As a result, the risk profile of American Indians and Alaska Natives now resembles the more disadvantaged fraction of white society.

Low socioeconomic status is itself a barrier to reducing levels of behavioral risk. Whites with low socioeconomic status have been slowest to adopt recommended lifestyle changes. Thus, American Indian and Alaska Natives who have low socioeconomic status may be slow to change. Members of this minority are likely to experience greater risk from chronic disease in coming years as the consequences of unhealthy

behaviors and a predisposition to diabetes take their toll. The duration of this period of higher disease rates will depend largely on how long it takes for rates of smoking and obesity to decline among members of this minority.

Several factors combine to worsen the situation. First, the current disease burden is actually greater than the published rates suggest. Incorrect racial assignment has led to missing cases and deaths among American Indians and Alaska Natives. Behavior surveys that use telephones tend to miss the poorest—and generally least healthy—members of this group who often do not have telephones. Second, the American Indian and Alaska Native population is aging, and the absolute number of elderly and chronically ill people in the group is likely to increase. Third, attempts at health promotion for this minority face significant geographic, cultural, and language barriers.

RECOMMENDATIONS

Public health agencies should try to improve the completeness and overall quality of health statistics for members of the American Indian and Alaska Native population. Additional information should be collected about the extent to which existing public health strategies to address behavioral risks have been applied in the reservation setting and the attitudes of tribal leaders about these strategies.

Special attention should be given to assessing the health status of the members of this minority who reside in urban areas. They are often lumped with other minority groups or whites and usually are not numerous enough to form identifiable enclaves.

Both disease surveillance and interventions need to be organized at the local level because of the diversity in this population. Local level means the tribal or, at least, the IHS service-area

level. The IHS has begun efforts along these lines. The current movement to encourage local communities to collect data about themselves and identify their own solutions can be applied to individual tribes as well. Local solutions to health problems are much more likely to be culturally appropriate and gain local support.

Public health agencies and tribal governments should collaborate to address the major interrelated problems of tobacco use, diet, and diabetes among persons in this population. Diabetes is important not only because of its place as a leading cause of death among American Indians and Alaska Natives, but also because it contributes to cardiovascular disease, as do diet and smoking. Obesity predisposes some

people to diabetes, and smoking and poor diet complicate the management of diabetes. Improvement made in any of these three areas is likely to have multiple benefits.

Finally, tobacco control efforts should focus on children because of the large percentage of school-aged children in this minority group and because of the advantages of preventing unhealthy behaviors rather than attempting to correct them later in life. To this end, tribal governments are seriously considering policies such as increasing tobacco excise taxes, establishing laws that prohibit minors from buying tobacco products, and restricting tobacco advertising and promotion.



4 ASIANS AND PACIFIC ISLANDERS

Benedict I. Truman, MD, MPH; Jessie S. Wing, MD; Nora L. Keenan, PhD

THE POPULATION

The current usage of the term *Asian and Pacific Islander* refers to the subgroup of Americans who have origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands (Appendix A).

POPULATION SIZE AND GROWTH

The 1990 census enumerated 7.3 million Asians and Pacific Islanders,* or nearly three percent of the U.S. population. Of these Americans, 6.9 million are Asians, and 365,000 are Pacific Islanders. The 1990 census tabulated data on 24 ethnic populations within the Asian and Pacific Islander racial group. The ethnic groups for Asians, in descending order of size, are Chinese, Filipino, Japanese, Asian Indian, Korean, Vietnamese, Laotian, Cambodian, Thai, Hmong, Pakistani, Indonesian, Malayan, Bangladeshi, Sri Lankan, and Burmese (*Figure 4.1*).¹ Hawaiians are the largest ethnic group among Pacific Islanders, followed by Samoan, Guamanian, Tongan, Fijian, Palauan, Northern Mariana Islander, and Tahitian (*Figure 4.2*).²

Population size, composition, and growth rate are influenced by immigration patterns, fertility rates, and mortality rates.

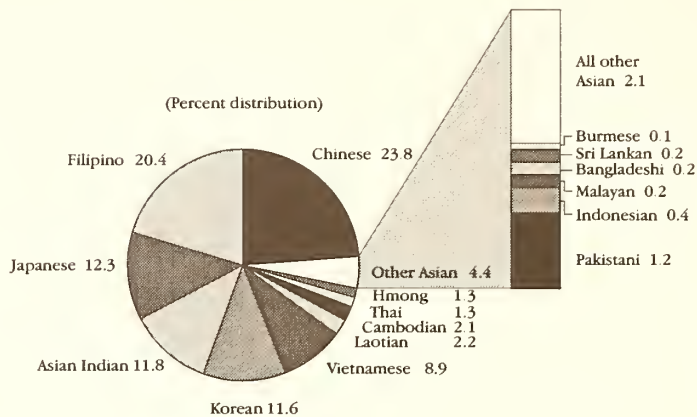
In turn, population size, composition, and growth rate influence current and future burden of chronic disease disability, morbidity, and mortality. In 1990, the non-Hispanic white population (*Figure 4.3*) was a slow growing, fast aging population whose growth was largely fueled by natural increase. In contrast, the Asian and Pacific Islander population was a fast growing, slow aging population whose growth was largely fueled by immigration of the young and their growing families (see *Table A.1* in Appendix A). Smaller percentages of Asians and Pacific Islanders were middle-aged (45–64 years), elderly (65–84 years), and very old (85 years old and older) than were non-Hispanic whites (*Table 4.1*).

The age and sex composition of the Asian and Pacific Islander population is typical of fast growing populations (*Figure 4.4*). Distributions across 5-year age groups are similar for men and women, but a higher percentage of women than men are in the age groups older than 55–59 years. The male:female ratios are slightly lower among Asians and Pacific Islanders than among non-Hispanic whites below age 65 years. In the 65–84 age category and above the ratios are much higher for Asians and Pacific Islanders (*Table 4.2*).

The Asian and Pacific Islander population increased from 1.5 million in 1970 to 3.7 million in 1980 to 7.3 million in 1990. In

*See Appendix A (part III) for a description of age- and race-modified census file used in census analyses.

Figure 4.1—Distribution of the Asian population, by ethnic group, United States, 1990

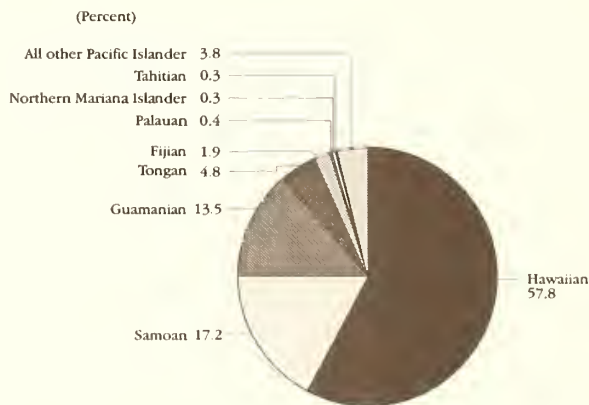


Source: Bureau of the Census, *We, the American Asians*, 1993.

descending order of importance, the dramatic increases were attributable to immigration, natural increase, and changes in enumeration procedures.^{1,2} Future trends in population size

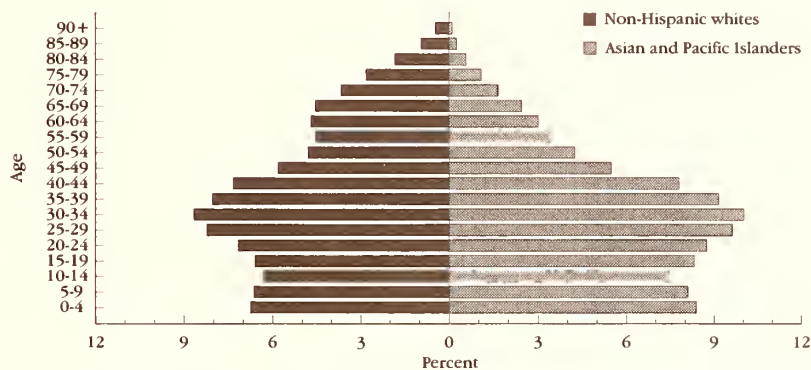
will be influenced by changing demographic factors, immigration statutes, and political and economic forces in the United States, as well as in Asia and in the Pacific Islands. For example, a

Figure 4.2—Distribution of the Pacific Islander population, by ethnic group, United States, 1990



Source: Bureau of the Census, *We, the American Pacific Islanders*, 1993.

Figure 4.3—Age distribution of Asian and Pacific Islander and white non-Hispanic populations, United States, 1990



Source: Bureau of the Census, 1990.

decrease in population size is expected among Japanese Americans because of their low fertility rates and low immigration. However, the number of Filipinos, Koreans, Vietnamese, and other groups that have high immigration and

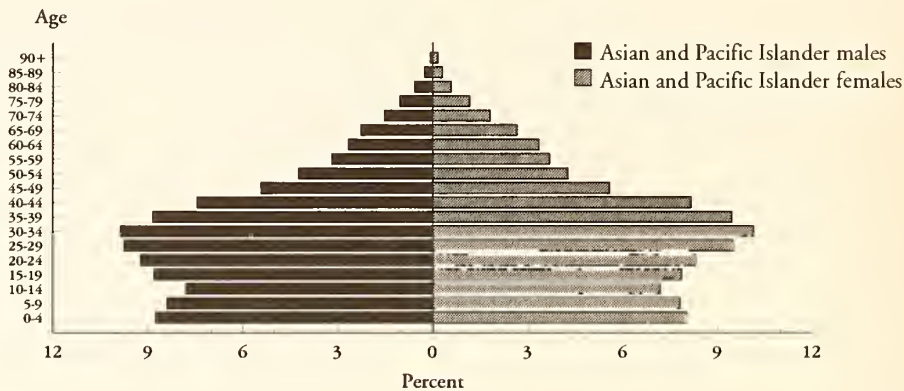
fertility rates are expected to increase. According to projections by the Bureau of the Census, Asians and Pacific Islanders will comprise 4.5 percent of the total U.S. population by the year 2000 and 10.7 percent by the year 2050.³

Table 4.1—Age distribution of the Asian and Pacific Islander and the white non-Hispanic populations, United States, 1990.

Age Group (years)	Asians and Pacific Islanders %	Whites %
<15	24.0	19.7
15-44	53.7	46.1
45-64	16.2	19.9
65-84	5.8	12.9
85+	0.4	1.4

Source: Bureau of the Census, 1990.

Figure 4.4—Age distribution of Asian and Pacific Islander males and females, United States, 1990



Source: Bureau of the Census, 1990.

MIGRATION PATTERNS

Much of the population increase among Asians and Pacific Islanders in the past 20 years is attributable to increased immigration from Asian and Pacific Island countries because of an

easing of restrictive immigration laws⁴ and the IndoChina Migration and Refugee Assistance Act of 1975.¹ In 1990, 66 percent of Asians were born in foreign countries, whereas only 13 percent of Pacific Islanders were born in foreign countries.^{1,2} Thirty-eight percent of Asian Americans

Table 4.2.—Age-specific male:female ratios* for the Asian and Pacific Islander and white non-Hispanic populations, United States, 1990

Age Group (years)	Asians and Pacific Islanders	Whites
<15	103.7	105.7
15-44	96.5	101.2
45-64	87.6	94.3
65-84	82.8	71.4
85+	69.2	37.5

*The male:female ratio is the number of males per 100 females.

Source: Bureau of the Census, 1990.

entered the United States between 1980 and 1990. A high proportion of some ethnic groups entered the United States during this period: Cambodians (69.7%), Laotians (63.1%), Hmong (49.5%), and Asian Indian (43.9%).¹ Relatively large numbers of Vietnamese refugees live in the South, specifically in Texas, Louisiana, and Virginia, because of the refugee resettlement program's objectives to disperse persons throughout the country to help speed their assimilation and lessen the impact of large groups arriving at one time.

An ebb and flow migration pattern is closely tied to the political and economic trends in the countries of origin. For example, further changes in the Asian and Pacific Islander immigration patterns to the West may occur with the expected political reunification of Hong Kong with China in 1997, the political futures of Taiwan and the Philippines, the economic development in Korea, and the normalization of diplomatic relations with Vietnam. A *brain drain*, the immigration of highly trained technical people to the United States, has become a modern concern for many rapidly developing Asian countries. However, a return stream may be experienced as some developing Asian countries develop higher standards of living.

GEOGRAPHIC DISTRIBUTION

Data from the 1990 census showed that 55 percent of the Asian population lived in the West, whereas only 21 percent of the total population lived in the West. Nearly 58 percent lived in California, Hawaii, and New York; another 19 percent lived in Texas, Illinois, New Jersey, Washington, Virginia, and Florida. Only four states (Alaska, California, Hawaii, and New York) have counties in which the population of Asians and Pacific Islanders is more than 10 percent of the county population (see *Table A.4* in Appendix A), but many states have concen-

trations of Asians and Pacific Islanders in urban areas. A census report based on data collected in 1991 and 1992 reported that 45 percent of Asians and Pacific Islanders lived in the central cities, 49 percent lived in the suburbs, and 6 percent lived in nonmetropolitan areas.⁵ Asians and Pacific Islanders were almost twice as likely as whites to live inside central cities of metropolitan areas. This finding may reflect recency of immigration—traditionally, immigrants have congregated in cities, but later generations were more evenly distributed geographically.

SOCIOECONOMIC INDICATORS

Current socioeconomic indicators among Asians and Pacific Islanders in the United States range from relative affluence to frank poverty. Although Asians and Pacific Islanders are often depicted as a model minority—hard-working, self-reliant overachievers with a good socioeconomic status—data show a wide range of socioeconomic indicators across and within the ethnic subgroups. For example, the per capita income for the Japanese, Asian Indian, and Chinese is higher than the national per capita income, yet the per capita income for other Asian groups, such as the Vietnamese, Laotians, Cambodians and Hmong, falls well below the national level.¹ All of the Pacific Islander groups fall below the national per capita income. This finding may reflect the larger average size of the families of Pacific Islanders than of the families of persons in the general U.S. population. Data from the 1990 census showed that about 14 percent of Asian Americans and 17 percent of Pacific Islanders lived in poverty, whereas 13 percent of persons in the total U.S. population lived in poverty.^{1,2} The high poverty rates among the Hmong (63.6%), Cambodian (42.6%), and Laotian (34.7%) populations are in marked contrast to the low poverty rates among the Japanese (7.0%) and the Filipino (6.4%) popu-

lations. The ethnic groups with the higher economic indicators are those who have been in the United States for a longer period of time.

Both Asian Americans (77.6%) and Pacific Islanders (76.1%) aged 25 years and older have slightly higher rates of completing high school than do persons in the general U.S. population (75%).^{1,2} However, level of education varies widely among persons in the subgroups. For example, among persons aged 25 years and older, 87.5 percent of Japanese Americans had completed 12 or more years of education, whereas only 31.1 percent of the Hmong in this age group had completed 12 or more years of education. Pacific Islanders were less likely to be college graduates (10.8%) than were Asian Americans (37.7%) or persons in the general population (20.3%).

ETHNIC DIVERSITY

In the United States, diversity rather than commonality, characterizes Asians and Pacific Islanders. More than thirty major languages or dialects are described among the Asian and Pacific Islander population. Data from the 1990 census indicated that about two-thirds of the persons in this population group spoke an Asian or Pacific Islander language at home. More than 60 percent of Southeast Asians (Vietnamese, Cambodian, Hmong, and Laotian) demonstrated limited proficiency in English. In addition, many different religions, including Buddhism, Hinduism, Islam, Catholicism, and other Christian religions, are practiced by Asians and Pacific Islanders.

Over time, the Asian and Pacific Islander subgroups tend to lose their tendency toward social and cultural isolation from the dominant American culture. A number of factors may contribute to changes in ethnic insularity. These factors may include the proportion of foreign-born Asians and Pacific Islanders in the United

States; the existence of ethnic enclaves; the degree of acculturation and assimilation of the group; the strength of the group's ethnic identity, religious affiliations, and other socio-political affiliations such as community centers; urban versus rural residence; improved English language skills; and western influences. Assimilation through marriage outside the group also dilutes an ethnic group's insularity. Modern influences, such as television, videos, and music, also contribute to assimilation into American culture.

HEALTH CARE

Ancient eastern philosophies of holistic health and traditional medicine emphasize elements of prevention such as a balance for good health, the importance of good diet and healthy behaviors, the use of ginseng and other herbs, and acupuncture. These traditional philosophies may serve as a reference from which many Asian and Pacific Islander immigrant families begin their western practices of health. However, in the United States, a rich diversity exists among persons in the various subgroups in how western influences are combined to form personal and family philosophies of health. The resultant attitudes and behaviors are ultimately a function of initial influences, the length of time in the United States since immigration, the level of western acculturation and assimilation, level of education and income, socioeconomic stability, and access to western medicine.

PUBLIC HEALTH IMPLICATIONS

Population size, composition, and growth rate play dominant roles in determining the current and future burden of chronic disease disability, morbidity, and mortality. For example, because the fastest growing group of persons in the Asian and Pacific Islander population are those aged 18–44 years, policymakers may want to

assign public health priority to issues related to maternal and child health, infectious diseases, and injuries rather than to the prevention and control of chronic diseases. The large number of foreign-born Asians and Pacific Islanders in the United States have problems related to chronic disease and access to health care that are different from those seen among established and culturally assimilated Asian and Pacific Islander subgroups.

The geographic distribution of the Asian and Pacific Islander population is relevant to prevention and control of chronic diseases because immigrant population streams with similar patterns of chronic disease burden tend to cluster in particular places and because the elderly of all races and ethnic groups tend to migrate from the north to the warmer climates in the South, the West, and the Southwest. State-specific concentrations of homogeneous ethnic groups within the Asian and Pacific Islander population may offer states the opportunity to mount highly efficient intervention efforts aimed at these particular subgroups. County level concentrations of ethnic groups may offer similar opportunities. Moreover, county level analysis of population distribution is unavoidable if state and local health departments adopt objective 22.5a from *Healthy People 2000*.⁶ (See part III in Appendix A).

As the large proportion of young Asians and Pacific Islanders move into the older age categories in the future, the health concerns of the middle-aged and elderly will need to be addressed through both research and service programs. In the upper age brackets, Asian and Pacific Islander women, along with women of other races, comprise progressively larger proportions of the total population at risk for the adverse consequences of chronic diseases.

CONCLUSION

In summary, Asians and Pacific Islanders in the United States are not homogeneous—differences in age distribution, fertility rates, geographic location, education, occupation, and income may affect health status, behaviors, and outcomes. The next sections deal with life expectancy, mortality, morbidity, health status, and health behaviors. The final section summarizes the public health implications of the data in terms of health promotion and chronic disease prevention among the Asian and Pacific Islander population.

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LIFE EXPECTANCY

Life expectancy at birth and at older ages is the primary measure used to express the number of years of life the average member of a population can expect to live beyond the attained age if subjected to the prevailing mortality experience throughout life. Because life expectancy at birth is strongly influenced by infant and child mortality, life expectancy at ages 45 years and 65 years are more appropriate for evaluating the effect of chronic diseases on longevity.¹ Over the course of 10 to 20 years, success in chronic disease prevention and control may be reflected in life expectancy gains due to the prevention of a portion of deaths caused by those chronic diseases among persons at risk.²

Each year since 1945, the National Center for Health Statistics has used the number of deaths that occurred during the calendar year

and the midyear postcensal population estimates that are provided by the Bureau of the Census to construct official demographic life tables for the United States population and selected subgroups for which accurate data are available. To date, annual life tables for the entire population of Asian and Pacific Islander Americans have not been published.³ However, Gardner has compiled estimates of life expectancy for the Asian and Pacific Islander population and selected subgroups for selected years from a variety of sources (Appendix B).⁴

In 1979 through 1981, the overall life expectancy at birth for all Asian and Pacific Islander groups in the United States was 81.9 years; the overall life expectancy at birth for whites was 74.5 years and 73.9 years for the total U.S. population. In California, Japanese Americans and Chinese Americans combined (life expectancy, 82.5 years) were expected at birth to live 8 years longer than were white Americans (life expectancy, 74.9 years) (*Table 4.3*).

Detailed life tables for Hawaii by sex and ethnicity have been published each decade beginning in 1910. The most recent data available are for 1980 (*Table 4.4*).⁴ Among Asians and Pacific Islanders in Hawaii, the estimated life expectancy at birth in 1980 was 80.2 years for persons classified as Chinese, 79.7 years for persons classified as Japanese, 78.8 years for persons classified as Filipino, 76.4 years for those classified as white, and 74 years for persons classified as Hawaiian or part Hawaiian. Life expectancy at ages 45 years and 65 years maintained the same relative rank order among ethnic groups. However, the gap in longevity between Chinese Hawaiians—the group with the most favorable life expectancy—and persons classified as Hawaiian or part Hawaiian—the group with the least favorable life expectancy—narrowed from 6 years at birth to 4 years at age

Table 4.3—Estimated life expectancy at birth for men and women combined, by ethnic group, Hawaii (1980), California (1979–1981), and the United States (1979–1981)

Race/Ethnicity	Hawaii (1980)	California (1979–1981)	United States (1979–1981)
All	78.0	74.8	73.9
White	76.4	74.9	74.5
Chinese	80.2	—	—
Filipino	78.8	—	—
Hawaiian/ part Hawaiian	74.0	—	—
Japanese	79.7	—	—
Chinese and Japanese	—	82.5	—
Asian and Pacific Islander	—	—	81.9

Based on Table 3.2 in *Confronting Critical Health Issues of Asian and Pacific Islander Americans*.⁵

45 years to 2 years at age 65 years. Among Asians and Pacific Islanders in Hawaii, females had a higher life expectancy than did males (Table 4.4). Between 1920 and 1980, life expectancy at birth had increased for all race and ethnic groups. For the total population, the life expectancy increased from 45.7 years in 1920 to 78 years in 1980 (Data not shown).

Gardner has urged caution in interpreting these data because of concerns about data quality and the instability of small numbers. He concluded that data on mortality, and, by extension, life expectancy, are not as good as those for whites, mainly because of errors of misclassification and underascertainment in both the numerators (deaths by ethnicity) and the denominators (population at risk by ethnicity). Moreover, the separate estimates of life expectancy for Asians and Pacific Islanders who lived in the United States, California, and Hawaii were compiled from a variety of sources. Each of

these sources was subject to unique limitations and biases that were introduced by efforts to deal with the problems of data quality and instability.^{4,5}

Despite the stated limitations of the data, the life expectancy for Asian Americans and the three principal subgroups—Chinese, Japanese, and Filipino—is higher than the life expectancy for whites. The life expectancy for Hawaiians or persons who are part Hawaiian appears to be lower than the life expectancy for each of the three Asian subgroups, as well as for whites. The reasons for the differentials in life expectancy among these groups remain unknown. Numerous hypotheses, including genetic theories, selective immigration, socioeconomic and demographic factors, culture, and other risk factors, remain untested because of methodologic challenges and competing priorities.⁵ Data that more closely capture the full diversity among all Asian and Pacific Islander ethnic groups in the

Table 4.4—Life expectancy at birth, at age 45 years, and at age 65 years, by sex and ethnicity, Hawaii, 1980

Sex/Ethnicity	At Birth	At Age 45 Years	At Age 65 Years
Both/all	78.02	35.81	19.19
White	76.38	34.19	18.00
Chinese	80.24	37.00	19.07
Filipino	78.78	35.99	18.24
Hawaiian/part Hawaiian	74.01	33.07	17.23
Japanese	79.66	36.85	19.08
Other	76.58	34.67	18.01
Men/all	75.04	33.40	17.50
White	74.15	32.57	17.35
Chinese	78.41	35.47	18.08
Filipino	77.34	35.12	17.90
Hawaiian/part Hawaiian	70.86	30.98	16.23
Japanese	77.74	35.40	18.34
Other	72.60	31.48	16.47
Women/all	81.45	38.53	21.11
White	79.08	36.03	18.72
Chinese	81.73	38.30	19.85
Filipino	81.04	37.70	19.43
Hawaiian/part Hawaiian	76.02	33.98	17.48
Japanese	81.54	38.21	19.81
Other	78.05	35.19	18.07

Adapted from Robert W. Gardner. Life Tables by Ethnic Group for Hawaii, 1980. R & S Report. Issue No. 47, March 1984. Research and Statistics Office Hawaii State Department of Health.

United States, including Asian Indians, Pakistanis, Vietnamese, and other Southeast Asians, may substantially alter the life expectancy estimates described above.

Because Asians and Pacific Islanders tend to have life expectancies that are among the highest among Americans, some may wonder if efforts to improve quality of life should not take priority over efforts to increase quantity of life among persons in this population. However, this is a false dichotomy of options because both

courses may be simultaneously pursued. The specific role of the chronic diseases that exert a major impact on longevity and the quality of life among Asians and Pacific Islanders is examined from the perspective of mortality rates in the next section.

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MORTALITY

Mortality data are used to identify the leading causes of death among subgroups. By examining sex-, age-, and cause-specific mortality rates by racial/ethnic group for the most important chronic diseases, public health planners can determine how best to meet our national goals of increasing the span of healthy life for Americans and of reducing health disparities among Americans. The focus is on middle-aged and elderly populations because the burden of premature death from chronic diseases and the opportunities for prevention and control are greater among persons in these populations than among persons in younger populations.

The following section presents age-specific and age-adjusted 1990 mortality rates by sex for Asian and Pacific Islander adults for 10 chronic diseases: chronic obstructive pulmonary disease (COPD), cirrhosis, colorectal cancer, diabetes, ischemic heart disease (IHD), lung cancer,

stroke, breast cancer, cervical cancer, and prostate cancer (Appendix C).

AGE-SPECIFIC MORTALITY RATES

Women. Among Asian and Pacific Islander women aged 45-64 years, breast cancer, stroke, IHD, and lung cancer are co-equal as the four leading causes of death of the nine chronic diseases that were examined (*Table 4.5*). Colorectal cancer, diabetes, COPD, cirrhosis, and cervical cancer follow in descending order of importance. The mortality rates among middle-aged Asian and Pacific Islander women are 32 to 65 percent of the white rates, except for stroke and cervical cancer where the Asian and Pacific Islander rates are 120 percent and 84 percent of the white rates, respectively.

Among Asian and Pacific Islander women aged 65 years and older, IHD, stroke, and lung cancer are the three leading causes of death with rates 4 to 18 times higher than those for women in the younger age category. Diabetes, colorectal cancer, COPD, breast cancer, cirrhosis, and cervical cancer rank lower as causes of death. The mortality rates among elderly Asian and Pacific Islander women are 30 to 74 percent of the white rates. The diseases also retain similar rankings to those seen among white women except for diabetes and colorectal cancer, which rank higher, and breast cancer, which ranks lower among Asians and Pacific Islanders.

Men. The three leading causes of death among Asian and Pacific Islander men aged 45-64 years are IHD, lung cancer, and stroke (*Table 4.6*). Colorectal cancer, cirrhosis, diabetes, COPD, and prostate cancer follow in descending order of importance. The mortality rates among Asian and Pacific Islander men aged 45-64 years are 27 to 63 percent of the white rates; the mortality rates for stroke were equal among Asian and Pacific Islander men and white men in this same age group.

Table 4.5—Rank order of age-specific crude mortality rates* for major chronic diseases as underlying cause of death for Asian and Pacific Islander women and white women, United States, 1990

Persons Aged 45–64 Years		Persons Aged 65 Years and Older	
Asian and Pacific Islander	White	Asian and Pacific Islander	White
Breast cancer (29.5)	Ischemic heart disease (75.1)	Ischemic heart disease (512.1)	Ischemic heart disease (1179)
Stroke (29.2)	Lung cancer (68.0)	Stroke (281.3)	Stroke (420.6)
Ischemic heart disease (27.9)	Breast cancer (60.3)	Lung cancer (95.8)	Lung cancer (180.7)
Lung cancer (22.6)	COPD† (24.1)	Diabetes (78.0)	COPD† (176.8)
Colorectal cancer (13.2)	Stroke (24.0)	Colorectal cancer (55.0)	Breast cancer (135.3)
Diabetes (9.3)	Colorectal cancer (20.2)	COPD† (54.6)	Colorectal cancer (120.8)
COPD† (7.7)	Diabetes (16.4)	Breast cancer (15.4)	Diabetes (106.3)
Cirrhosis (6.0)	Cirrhosis (12.6)	Cirrhosis (15.4)	Cirrhosis (24.8)
Cervical cancer (2.1)	Cervical cancer (2.5)	Cervical cancer (3.6)	Cervical cancer (12.1)

*Rate per 100,000 persons.

†COPD = Chronic obstructive pulmonary disease.

Source: CDC, National Center for Health Statistics, National Vital Statistics System, 1990.

Among Asian and Pacific Islander men aged 65 years and older, the three leading causes of death were IHD, stroke, and lung cancer; the rates of death were 6 to 11 times higher among these men than among middle-aged men (45–64 years old). The mortality rates among elderly (65 years old and older) Asian and Pacific Islander men are 45 to 76 percent of the white rates for all diseases except stroke. The rates for stroke were about equal for elderly Asian and Pacific Islander men and white men.

Comparing men and women. IHD is among the leading causes of death for Asian and Pacific Islander men and women in both age categories; it is the leading cause of death for men and for women in the 65 and older age group. However, the leading cause of death for women in the 45–64 age group is breast cancer; stroke, and IHD follow. Stroke and lung cancer are the second and third leading causes of death for both men and women in the older age category and for men in the younger age category.

Table 4.6—Rank order of age-specific crude rates* for major chronic diseases as underlying cause of death for Asian and Pacific Islander men and white men, United States, 1990

Persons Aged 45-64 Years		Persons Aged 65 Years and Older	
Asian and Pacific Islander	White	Asian and Pacific Islander	White
Ischemic heart disease (81.1)	Ischemic heart disease (237.1)	Ischemic heart disease (762.3)	Ischemic heart disease (1584)
Lung cancer (39.6)	Lung cancer (127.1)	Stroke (317.9)	Lung cancer (473.6)
Stroke (29.2)	Cirrhosis (31.5)	Lung cancer (253.8)	Stroke (363.9)
Colorectal cancer (16.2)	COPD† (31.3)	COPD† (169.3)	COPD† (343.1)
Cirrhosis (15.0)	Colorectal cancer (29.4)	Colorectal cancer (100.2)	Prostate cancer (217.5)
Diabetes (12.3)	Stroke (29.2)	Prostate cancer (99.7)	Colorectal cancer (164.9)
COPD† (10.8)	Diabetes (19.5)	Diabetes (81.0)	Diabetes (106.3)
Prostate cancer (3.2)	Prostate cancer (12.1)	Cirrhosis (21.7)	Cirrhosis (47.6)

*Rate per 100,000 persons.

†COPD = Chronic obstructive pulmonary disease.

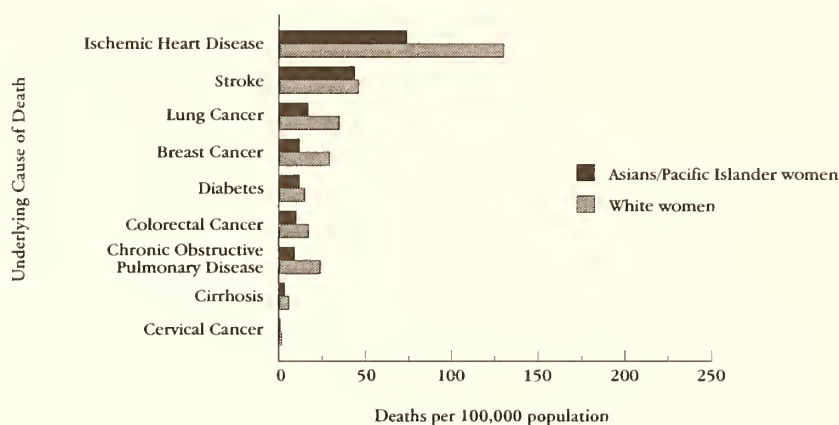
Source: CDC, National Center for Health Statistics, National Vital Statistics System, 1990.

AGE-ADJUSTED MORTALITY RATES

Women. After adjusting for the differences in age structure of the Asian and Pacific Islander and white populations of women, the rank order of importance for the nine causes of death from chronic diseases is similar for the two populations, with the exception of diabetes,

which ranks fifth among Asians and Pacific Islanders and seventh among whites, and COPD, which ranks seventh among Asians and Pacific Islanders and fifth among whites. The rates for all causes of death from chronic diseases are lower for Asians and Pacific Islanders than for whites (*Figure 4.5*).

Figure 4.5—Age-adjusted cause-specific mortality rates* for Asian and Pacific Islander women and white women, by underlying cause of death, United States, 1990



*Age-adjusted to the 1980 U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

Men. Among men, the rank order of importance for the eight causes of deaths from chronic diseases is different for the two populations. Stroke (second) and colorectal cancer (fifth) rank higher among Asians and Pacific Islanders than among whites; lung cancer (third) and prostate cancer (sixth) rank lower among Asians and Pacific Islanders than among whites. Asian and Pacific Islander rates are lower than white rates for all causes of death from chronic diseases (Figure 4.6).

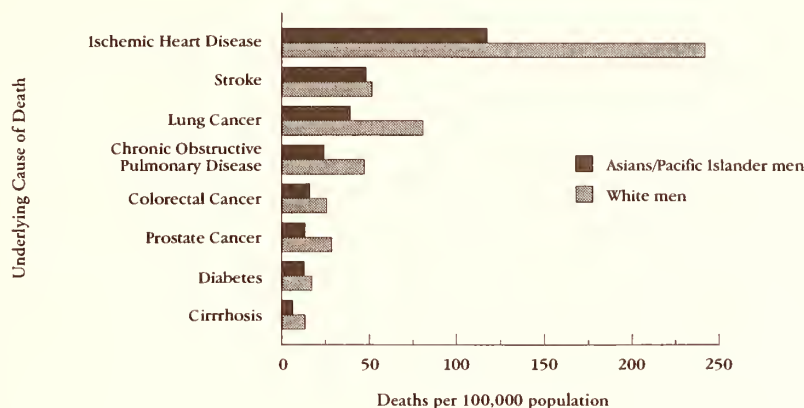
Comparing men and women. After adjusting for differences in age structure between Asian and Pacific Islander men and women, the rank order of importance for the causes of death common to both sexes is similar, except for COPD, which ranks fourth among men and seventh among women, and diabetes, which ranks seventh among men and fifth among women. Among Asians and Pacific Islanders, age-adjusted mortality rates are higher for men than for women for all causes of death common

to both sexes (See Tables C.2 and C.3 in Appendix C).

PUBLIC HEALTH IMPLICATIONS

Among all four age-sex subgroups of Asians and Pacific Islanders, IHD, lung cancer, stroke, and breast cancer consistently rank highest among those diseases that pose the greatest risk of premature death. These same diseases also account for a large proportion of all deaths from the chronic diseases of national importance. To fully realize year 2000 national goals, these conditions should be given highest priority for research, resources, and interventions on risk factors. The consistently lower mortality rates among Asian and Pacific Islander subgroups should serve as indicators of what is potentially achievable for all subgroups of Americans with less favorable mortality and life expectancy profiles.

Figure 4.6—Age-adjusted cause-specific mortality rates* for Asian and Pacific Islander men and white men, by underlying cause of death, United States, 1990



*Age-adjusted to the 1980 U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

MORBIDITY

The goals of chronic disease prevention and control are to reduce the incidence of disease and the severity of illness, to delay the onset of disability, and to increase the span of healthy life. Population-based measures of morbidity and quality of life, together with measures of mortality and life expectancy, are important for monitoring progress toward the achievement of those goals.¹ Traditional epidemiologic measures of morbidity include incidence and prevalence. However, detailed and high-quality data sources for these measures of morbidity are rarely available for most chronic diseases of national importance and seldom adequately cover racial and ethnic minority groups.

This section presents 1986–1990 data available from the National Health Interview Survey (NHIS) about the prevalence of selected chronic conditions and the published data from the Surveillance, Epidemiology, and End Results

(SEER) Program of the National Cancer Institute about the incidence and 5-year relative survival for cancers of selected sites among Asian and Pacific Islander Americans (Appendix D).

PREVALENCE OF SELECTED CHRONIC CONDITIONS

Women. Among Asian and Pacific Islander women who responded to the NHIS (1986–1990), four of the eight chronic conditions examined met minimum standards of statistical stability (relative standard errors less than 30%). Hypertension was the most prevalent condition followed by asthma, chronic bronchitis, and diabetes in descending order of relative importance. The crude prevalence rate of each condition was lower among Asian and Pacific Islander women than among white women. When age-standardized to the 1980 U.S. population to equalize the age structure of the comparison populations, the rates among Asian and Pacific Islander women remained lower

than those among white women except for the diabetes rates that were now equal (*Table 4.7*).

Men. Among Asian and Pacific Islander men, only three of the eight chronic conditions examined met the minimum criterion of statistical stability. Hypertension was the most prevalent chronic condition, followed by asthma and diabetes in descending order of importance. The crude prevalence rates of hypertension, asthma, and diabetes, among Asian and Pacific Islander men were lower than those among white men. However, when age-adjusted, the hypertension and asthma rates among Asian and Pacific Islander men approached the rates among white men, and the rate for diabetes was higher for Asian and Pacific Islander men than the rate for white men (*Table 4.8*).

Comparing men and women. Among Asian and Pacific Islander Americans, both the crude and age-adjusted prevalence rates of hypertension, asthma, and diabetes among men were

higher than those among women. In contrast, both the crude and age-adjusted hypertension and asthma prevalence rates were lower for white men than for white women. The crude diabetes rate was lower and the age-adjusted diabetes rate was higher among white men than among white women.

CANCER INCIDENCE AND SURVIVAL

Cancers of the lung and bronchus (lung cancer), colon and rectum (colorectal), breast, cervix, and prostate are among the major causes of death due to chronic disease among Asian and Pacific Islander Americans (see mortality section). Moreover, cancers of these five sites are of special importance in the overall national strategy for cancer prevention and control because incidence rates are relatively high, prognosis and survival improve with early detection and treatment, and the potential for primary prevention [incidence reduction

Table 4.7—Crude and age-adjusted prevalence for selected chronic conditions* for Asian and Pacific Islander women and white women, by descending rank order for Asians and Pacific Islanders, United States, 1986-1990

Condition	Crude Prevalence		Age-adjusted Prevalence	
	Asian and Pacific Islander	White	Asian and Pacific Islander	White
	%	%	%	%
Hypertension	6.58	12.57	8.35	10.96
Asthma	1.89	4.30	1.78	4.30
Chronic bronchitis	1.63	6.32	1.62	6.23
Diabetes	1.39	2.67	2.38	2.36

* Prevalence data on ischemic heart disease, stroke, emphysema, and liver diseases were calculated but are not presented since the relative standard error for Asian /Pacific Islander women for these diseases was greater than 30 percent.

Source: CDC, NCHS, National Health Interview Survey, 1986-1990.

Table 4.8—Crude and age-adjusted prevalence for selected chronic conditions* for Asian and Pacific Islander men and white men by descending rank order for Asians and Pacific Islanders, United States, 1986-1990

Condition	Crude Prevalence		Age-adjusted Prevalence	
	Asian and Pacific Islander %	White %	Asian and Pacific Islander %	White %
Hypertension	7.50	10.64	9.67	10.32
Asthma	3.27	4.14	3.96	4.26
Diabetes	2.31	2.46	3.37	2.45

*Prevalence data on chronic bronchitis, ischemic heart disease, stroke, emphysema, and chronic liver diseases were calculated but are not presented because the relative standard error for Asian and Pacific Islander men for these diseases was greater than 30 percent.

Source: CDC, NCHS, National Health Interview Survey, 1986-1990.

through risk factor reduction] or for mortality reduction [through early detection] is good.²

This section presents incidence (1977-1983) and relative 5-year survival rates (1975-1984) for Asian men and women (Chinese, Japanese, and Filipino only) who reside in areas covered by the SEER registries in San Francisco and Oakland and in Hawaii (Appendix D). The rates are compared with comparable data for white persons who reside in these areas.³ Incidence rates reflect, in part, the effect of past and current efforts at risk factor reduction (tobacco, diet, etc.) and screening for early detection. Relative survival rates reflect the effects of screening for early detection, access to clinical care, and the efficacy of that care.

Chinese Americans. Among Chinese men who lived in the San Francisco and Oakland and in the Hawaii SEER areas, lung cancer was the leading cancer among those examined; it was followed by colorectal and prostate cancer in descending order of importance. The 5-year relative survival rate was lowest for lung cancer,

better for colorectal cancer, and best for prostate cancer. Among Chinese women, cancer of the breast was the dominant site followed by colorectal, lung, and cervical cancer, in descending order of importance. The 5-year relative survival rate was lowest for lung cancer, successively higher for colorectal and cervical cancer, and highest for breast cancer. Of the cancers common to both men and women, the incidence rates for lung and colorectal cancers were higher among men than among women, and survival was better among women than among men for both sites (*Table 4.9*).

Japanese Americans. Among Japanese men who lived in the two SEER areas, colorectal cancer was the leading cancer among those examined; it was followed by lung and prostate cancers in descending order of importance. The 5-year relative survival rate was lowest for lung cancer, better for colorectal cancer, and best for prostate cancer. Among Japanese women, cancer of the breast was the most prevalent, followed by colorectal, lung, and cervical cancer. The 5-year

relative survival rate was lowest for lung cancer, successively higher for colorectal and cervical cancer, and highest for breast cancer. Of the cancers common to both men and women, the

incidence rates of lung and colorectal cancers were higher among men than among women and survival was better among women than among men for both site.

Table 4.9—Average annual age-adjusted* cancer incidence rates per 100,000 population and 5-year relative survival percentages for selected sites, by sex and ethnicity, San Francisco/Oakland and Hawaii Surveillance, Epidemiology, and End Results (SEER) registries, 1977–1983.

Ethnicity/Site	Both Sexes		Men		Women	
	Incidence	Survival	Incidence	Survival	Incidence	Survival
Chinese						
Lung/bronchus	40.6	15.1	57.4	15.0	24.8	15.4
Colon/rectum	40.4	53.1	48.8	48.7	33.0	58.8
Breast	29.8	80.9	0.5	—	57.8	80.8
Cervix	na	na	na	na	10.3	74.6
Prostate	na	na	29.6	72.5	na	na
Japanese						
Lung/bronchus	27.1	14.3	45.0	13.4	12.6	16.8
Colon/rectum	48.8	61.7	62.3	60.8	37.5	62.8
Breast	30.0	85.4	0.4	—	55.0	85.4
Cervix	na	na	na	na	5.9	70.2
Prostate	na	na	43.8	80.5	na	na
Filipino						
Lung/bronchus	27.3	13.2	35.5	14.3	16.1	10.1
Colon/rectum	30.3	44.8	36.7	42.5	18.3	51.4
Breast	19.8	73.6	0.4	—	41.3	73.6
Cervix	na	na	na	na	8.6	73.0
Prostate	na	na	44.0	71.7	na	na
White						
Lung/bronchus	53.6	15.7	77.5	13.8	36.2	18.9
Colon/rectum	49.1	54.4	59.6	54.2	41.9	54.6
Breast	52.6	78.3	0.8	90.2	96.8	78.3
Cervix	na	na	na	na	8.3	69.0
Prostate	na	na	70.7	73.0	na	na

*1970 U.S. standard; dashes (—) indicate too few cases to compute reliable estimates; na—not applicable.

Adapted from Tables 4.1 and 4.4 in *Confronting Critical Health Issues of Asian and Pacific Islander Americans, 1994*. Thousand Oaks, California: Sage Publications, Inc.

Filipino Americans. Among Filipino men who lived in the two SEER areas, cancer of the prostate was the leading cancer; it was followed by colorectal cancer and lung cancer. The 5-year relative survival rate was lowest for lung cancer, better for colorectal cancer, and best for prostate cancer. Among Filipino women, cancer of the breast was the dominant site, followed by colorectal, lung, and cervical cancers. The 5-year relative survival rate was lowest for lung cancer, successively higher for colorectal cancer and for cervical cancer, and highest for breast cancer. Of the cancers common to both men and women, the incidence rates for lung cancer and for colorectal cancer were higher among men than among women. Survival with lung cancer was better for men, and survival with colorectal cancer was better for women.

White Americans. Among white men who lived in the two SEER areas, lung cancer was the leading cancer among those examined; it was followed closely by prostate cancer and colorectal cancer. The 5-year relative survival rate was lowest for lung cancer, better for colorectal cancer, and best for prostate cancer. Among white women, cancer of the breast was the dominant site, followed by colorectal cancer, lung cancer, and cervical cancer. The 5-year relative survival rate was lowest for lung cancer, successively higher for colorectal and cervical cancers, and highest for breast cancer. Of the cancers common to both sexes, the incidence rates for lung cancer and for colorectal cancer were higher among men than among women, and the survival rate was better for women than for men.

Comparing Asians and Pacific Islanders and white Americans. The incidence rates in each subgroup of Asian and Pacific Islander men were lower than those among white men for each cancer site except for colorectal cancer, which was higher for Japanese men than for white

men. Survival patterns were comparable between Asian and Pacific Islander men and white men at each site except among Japanese men whose 5-year survival was better than that for all other subgroups for colorectal cancer and for prostate cancer. The incidence rates in each subgroup of Asian and Pacific Islander women were lower than those among white women for each cancer site. Survival patterns were comparable between Asian and Pacific Islander women and white women at each site (*Table 4.9*).

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HEALTH-RELATED QUALITY OF LIFE

The goals of chronic disease prevention and control are to reduce the incidence of disease, reduce the severity of illness, delay the onset of disability, and increase the span of healthy life. Thus, population-based measures of respondent-assessed health status and limitation of activity from chronic conditions, together with measures of mortality and morbidity, are important for monitoring the total health burden from chronic diseases. In this section, data from the National Health Interview Surveys (NHIS),

which were conducted from 1986 through 1990, are used to describe respondent-assessed health status and limitation of major activities because of chronic disease (Appendix E). In an effort to evaluate the collective impact of the eight self-reported chronic conditions examined in the previous section on health status and limitation of activity, the prevalence of these outcome measures was calculated for the subgroup of respondents reporting one or more of the eight conditions: hypertension, asthma, diabetes, chronic bronchitis, IHD, stroke, emphysema, and liver disease.

RESPONDENT-ASSESSED HEALTH STATUS

Women. Among Asian and Pacific Islander women who responded to the NHIS between 1986 and 1990, the percentage of persons who described their general health as being fair or poor increased with age (*Figure 4.7*). The corresponding percentages were of the same order of magnitude within age groups and showed a similar pattern of increase with age among white women.

Among Asians and Pacific Islanders in the subgroup who reported at least one of the eight chronic conditions, the percentage of persons who described their general health as being fair or poor also increased with age. The corresponding percentages were of the same order of magnitude within age groups and showed a similar pattern of increase with age among white women, except among respondents less than 45 years old—almost twice as many Asian and Pacific Islander women (30.1%) as white women (16.5%) described their health as fair or poor. Across all age groups and among both racial groups, persons in the chronic disease subgroup were more likely to report fair or poor health than were their counterparts in the total sample.

Men. Among Asian and Pacific Islander men, the percentage who described their general health as being fair or poor increased with age. The percentages were similar for those younger than 45 years old, but somewhat lower among Asian and Pacific Islander men aged 45 years and older. The pattern of increase with age was similar in both groups of men.

Among the respondents in the chronic disease subgroup, a lower percentage of Asian and Pacific Islander men (38.5%) than of white men (43.9%) aged 65 years and older reported fair or poor health. The numbers of Asian and Pacific Islander men in the other two age categories were too low to present estimates.

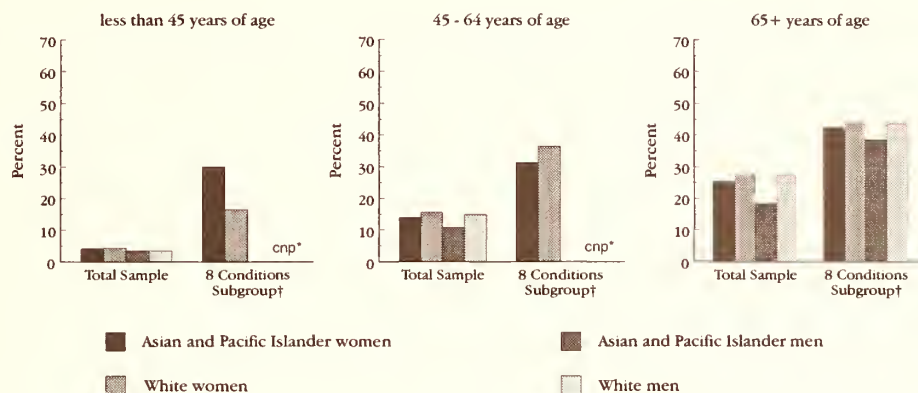
Comparing men and women. Among the total sample of Asian and Pacific Islander Americans, women in each age group were more likely than men to report their general health as being fair or poor. This was also true among white Americans except among those aged 65 years and older for whom the percentages were equal. Among the chronic disease subgroup, a higher percentage of Asian and Pacific Islander women (42.3%) than men (38.5%) aged 65 years and older described their health as being fair or poor. A comparison of men and women is not possible for the other age groups in the chronic disease subgroup because of small numbers of Asians and Pacific Islanders.

LIMITATION IN ACTIVITY DUE TO CHRONIC CONDITIONS

Women. Among Asian and Pacific Islander women who responded to the NHIS between 1986 and 1990, the percentage who reported limitation in a major activity from chronic disease increased with age (*Figure 4.8*). These percentages were lower but showed a similar pattern of increase with age than did the corresponding percentages among white women.

Among the Asian and Pacific Islander subgroup of women who reported one or more of

Figure 4.7—Age-specific prevalence of self-reported fair or poor health status among Asian and Pacific Islander adults and white adults, by type of sample, United States, 1986–1990



* cnp—comparison not possible because of small numbers of Asian and Pacific Islander men.

† Eight conditions subgroup—persons who reported any one of the following conditions: hypertension, asthma, diabetes, chronic bronchitis, ischemic heart disease, stroke, emphysema, liver diseases.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

the eight chronic conditions, the percentage who reported limitation in a major activity due to chronic disease was higher among those in the oldest age group (31.0%) than among those in the youngest age group (21.8%). A reliable estimate could not be presented for the middle age group because of the small numbers. Asian and Pacific Islander women who were less than 45 years old (21.8%) were more likely than white women of the same age (13.7%) to report limitation of major activity due to chronic diseases. However, those women aged 65 years and older (31.0%) were slightly less likely than white women in the same age group (34.6%) to report limitation of major activity from chronic disease.

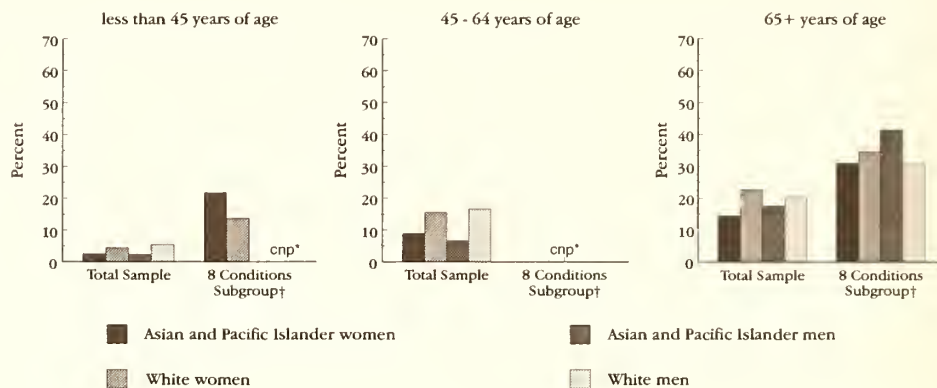
Men. The percentage of Asian and Pacific Islander men who reported limitation in a major activity from chronic disease increased with age.

These percentages were somewhat lower than the corresponding percentages among white men but showed a similar pattern of increase with age.

Among Asian and Pacific Islander men in the chronic disease subgroup, the percentage of men who reported limitation in a major activity was 41.4% for those over 64 years old. Asian and Pacific Islander men in this age category (41.4%) were more likely than white men (30.7%) to report limitation of major activity. Reliable estimates could not be presented for the other two age groups because of the small numbers of Asians and Pacific Islanders in the subgroup reporting one or more of the eight chronic diseases.

Comparing men and women. The only comparison that is possible is among men and women aged 65 years and older. Among Asians

Figure 4.8—Age-specific prevalence of self-reported limitation in activity because of chronic conditions among Asian and Pacific Islander adults and white adults, by type of sample, United States, 1986–1990



* cnp—comparison not possible because of small numbers Asian and Pacific Islander men.

† Eight conditions subgroup—persons who reported any one of the following conditions: hypertension, asthma, diabetes, chronic bronchitis, ischemic heart disease, stroke, emphysema, liver diseases.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

and Pacific Islanders, women were less likely (31.0%) than men (41.4%) to report limitation in a major activity due to chronic disease. In contrast, white women aged 65 years and older (34.6%) were slightly more likely than white men in this same age group (30.7%) to report such a limitation.

RISK FACTORS AND PREVENTIVE HEALTH PRACTICES

In this section, we present aggregated state-based prevalence estimates of selected risk factors, preventive health practices, and measures of access to preventive health services. These estimates were derived from the Behavioral Risk Factor Surveillance System (BRFSS) surveys in 48 states and the District of Columbia for 1991 and 1992 (Appendix F). Where

appropriate, *Healthy People 2000* targets for selected measures are presented to add context and a numerical frame of reference.

The prevalence of risk factors for chronic diseases and of preventive health practices aimed at mitigating the effect of those risk factors are often associated with age, education, and household income. Thus, between-group comparisons of prevalence estimates that are unadjusted for these potential confounders must be interpreted with caution.

DESCRIPTION OF THE WEIGHTED SAMPLE

The Asian and Pacific Islander women to whom BRFSS estimates apply were younger (mean age: 38.2 years versus 45.5 years), better educated, and lived in households with higher incomes than did their white counterparts (*Table 4.10*). Among men, the comparative distributions by age (mean

age: 37.1 years versus 43.0 years) and education were the same as those described for women. However, Asian and Pacific Islander men lived in households with slightly lower incomes than did their white counterparts.

Like the Asian and Pacific Islander population enumerated in the 1990 census, more than 50 percent of the BRFSS Asian and Pacific Islander

population is concentrated in a few states—California (30.3%), Hawaii (12.6%), and New York (11.7%). However, the weighting process masks the fact that 51 percent of the unweighted sample respondents were from Hawaii.

Table 4.10—Sample size and weighted estimates for demographic variables for Asian and Pacific Islander adults and white adults aged 18 years and older, United States,* 1991–1992

	Women				Men			
	Asian and Pacific Islander		White		Asian and Pacific Islander		White	
	sample size	weighted estimate %	sample size	weighted estimate %	sample size	weighted estimate %	sample size	weighted estimate %
Number	2,332		90,369		1,921		67,444	
Age (years)								
18–44	1,504	70.9	46,548	54.5	1,318	74.9	38,672	59.3
45–64	546	22.1	23,159	25.2	393	19.5	17,978	25.8
65+	282	7.0	20,662	20.3	210	5.7	10,794	14.9
Education (years)								
< 12	282	7.3	13,841	14.8	193	7.6	9,404	14.4
12	646	21.9	31,877	36.3	466	16.0	21,493	32.2
> 12	1,393	70.0	44,490	48.7	1,254	75.7	36,466	53.3
Refused	11	0.8	161	0.2	8	0.7	81	0.1
Annual Household Income								
<\$10,000	244	10.2	13,807	12.9	151	9.0	5,652	7.9
\$10,000–\$20,000	395	15.8	18,221	18.9	314	15.9	11,953	16.6
>\$20,000	1,355	62.6	46,250	54.6	1,276	62.9	43,228	65.3
Unknown/refused	338	11.4	12,091	13.6	180	12.2	6,611	10.1

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

RISK FACTORS

Between 1991 and 1992, Asian and Pacific Islander women who lived in participating (BRFSS) states tended to have reported a higher prevalence of sedentary lifestyle and lower prevalences of current smoking, binge drinking, overweight, and high cholesterol than did white women. Among women who smoked, Asians and Pacific Islanders smoked fewer cigarettes per day (14.7) than did their white counterparts (18.9) (*Table 4.11*). Asian and Pacific Islander women had met the year 2000 targets for prevalence of cigarette smoking and overweight, whereas white women had not met targets for these objectives.

The prevalence of high cholesterol was higher among Asian and Pacific Islander men than among white men, but the prevalence of current smoking, chronic drinking, binge drinking, and overweight was lower among Asian and Pacific Islander men than among their white counterparts. The prevalence of sedentary lifestyle was equal among Asian and Pacific Islander men and white men. Among smokers, Asian and Pacific Islander men smoked fewer cigarettes per day (19.5) than did white men (22.3). Asian and Pacific Islander men had met the year 2000 target for overweight but had not met the target for cigarette smoking. White men had not met the targets for cigarette smoking and overweight.

Among Asian and Pacific Islander respondents, the prevalence of self-reported overweight was about equal for men and women. Otherwise, men had reported higher prevalence of cigarette smoking, alcohol use, and high cholesterol but lower prevalence of sedentary lifestyle, than did women in this population. Among white respondents, men reported higher prevalences of all risk factors, with the exception of sedentary lifestyle and high cholesterol, than did women.

Prevalence estimates for selected risk factors for Asian and Pacific Islander respondents were stratified by the age, education, and income categories used in *Table 4.10*. Current smoking was most prevalent among men and women aged 18-44 years, among those with 12 years of education or less, and among men living in households with annual incomes of \$10,000 to \$20,000. High cholesterol was most commonly reported by men aged 45 years and older and by women aged 45 years and older and by women with 12 years of education or less.

PREVENTIVE HEALTH PRACTICES

Between 1991 and 1992, Asian and Pacific Islander men and women tended to report lower prevalences of having had their blood pressure measured within the past two years and their cholesterol measured within the preceding 5 years than did their white counterparts (*Table 4.12*). Prevalence of the use of both clinical preventive services was higher among women than among men in both racial groups. Women and men in both racial groups had not met the year 2000 target for having had a cholesterol measurement within the preceding 5 years. Higher percentages of Asian and Pacific Islander women and men smokers had quit for at least 1 day during the preceding year than had their white counterparts. Women and men in both racial groups had met the year 2000 target for having quit smoking for at least one day during the preceding year.

Breast and cervical cancer screening. Self-report of ever having had a Pap smear and of having had one within the preceding two years was lower among Asian and Pacific Islander women than among white women (*Table 4.13*). Neither racial group had met the year 2000 targets for having had a Pap smear. Examination of the prevalence rates among Asian and Pacific

Table 4.11.—Year 2000 targets and the prevalences of selected self-reported risk factors among Asian and Pacific Islander adults and white adults aged 18 years and older, United States,* 1991–1992

Risk Factor	Year 2000 Target [†]	Women				Men			
		Asian and Pacific Islander		White		Asian and Pacific Islander		White	
		%	(SE) [‡]	%	(SE) [‡]	%	(SE) [‡]	%	(SE) [‡]
Cigarette smoking [§]	≤ 15%	9.7	(1.04)	21.6	(0.20)	19.4	(1.59)	24.5	(0.25)
Sedentary lifestyle	—	64.7	(1.74)	56.4	(0.25)	56.6	(1.97)	56.2	(0.29)
Alcohol use									
chronic drinking [¶]	—	— ^{§§}		1.1	(0.06)	2.3	(0.42)	6.7	(0.15)
binge drinking ^{**}	—	3.5	(0.57)	7.5	(0.14)	12.8	(1.11)	23.1	(0.25)
Overweight ^{††}	≤ 20%	10.1	(1.03)	21.7	(0.21)	10.8	(1.12)	24.8	(0.26)
High cholesterol ^{‡‡}	—	25.8	(2.39)	27.0	(0.25)	27.4	(2.19)	25.8	(0.31)

* State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†] *Healthy People 2000*: specific targets given in objective 3.4 (cigarette smoking) and 2.3 (overweight).

[‡] Standard error.

[§] Cigarette smoking—ever smoked 100 cigarettes and currently smoke regularly.

^{||} Sedentary lifestyle—fewer than three 20-minute sessions of leisure-time physical activity per week.

[¶] Chronic drinking—60 or more drinks of alcohol during the past month.

^{**} Binge drinking—consumption of five or more alcoholic beverages on at least one occasion during the past month.

^{††} Overweight—body mass index ≥ 27.8 for men and ≥ 27.3 for women (body mass index = weight in kilograms divided by height in meters squared [BMI=kg/(m)²]).

^{‡‡} High cholesterol awareness—respondents ever told by a health professional that their cholesterol is elevated.

^{§§} Unstable estimate based on less than 50 observations.

^{||} Year 2000 targets do not meet standard BRFSS variables.

Sources: CDC, Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

Islander women by age, income, and education identified subgroups with the lowest prevalence of having had a Pap smear within the past 2 years: women aged 45 years and older, women with annual household incomes of less than \$20,000, and women with less than 12 years of education.

Among women aged 40 years and older, self-report of ever having had a clinical breast

examination and mammogram was lower among Asian and Pacific Islander respondents than among white respondents. Asian and Pacific Islander women aged 50 and older were also less likely to report having had a clinical breast examination and mammogram within the past two years than were white respondents. Neither racial groups had met the year 2000 targets for clinical breast examination and mammogram.

Table 4.12—Year 2000 target and the prevalences of self-reported preventive health practices recommended in *Healthy People 2000* among Asian and Pacific Islander adults and white adults, United States,* 1991–1992

Health Practice	Year 2000 Target [†]	Women				Men			
		Asian and Pacific Islander		White		Asian and Pacific Islander		White	
		%	(SE) [‡]	%	(SE) [‡]	%	(SE) [‡]	%	(SE) [‡]
Current cigarette smokers: quit at least one day in past year	≥ 50%	65.5	(4.90)	50.0	(0.53)	64.0	(4.29)	51.0	(0.57)
Blood pressure checked within past 2 years	— [§]	92.2	(0.93)	96.4	(0.10)	85.6	(1.53)	92.8	(0.16)
Cholesterol checked within past 5 years	≥ 75%	57.0	(1.89)	69.3	(0.24)	54.1	(1.92)	63.5	(0.29)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]*Healthy People 2000*: specific targets given in objective 3.6 (quit cigarette smoking at least one day) and objective 15.14 (have cholesterol checked).

[‡]Standard error.

[§]The objective for measuring blood pressure (objective 15.13) has two parts: having blood pressure measured within the preceding two years and being able to state whether their blood pressure is normal or high. The BRFSS survey cannot answer the second part of the objective. The target goal for the objective is 90%.

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

ACCESS TO PREVENTIVE SERVICES

Asian and Pacific Islander women were less likely to report having had a routine checkup within the past year, more likely to never have had a routine checkup, and more likely to lack a health care plan than were white women (*Table 4.14*). However, Asian and Pacific Islander women were less likely than white women to report that they were unable to see a doctor during the past year because of the cost. Among women with a health plan, fewer Asian and Pacific Islander women than white women

reported that their health plan did not cover checkups and other preventive services.

Use of routine checkups and indicators of access to care was better for Asian and Pacific Islander women than for men for six of the seven measures presented in *Table 4.14*, but women were slightly more likely than men to defer a doctor visit because of cost in the preceding year.

PUBLIC HEALTH IMPLICATIONS

Given the profile of modifiable risk factors related to chronic disease and to the level of

Table 4.13—Year 2000 targets and self-reported prevalence of breast and cervical cancer screening among Asian and Pacific Islander women and white women, United States,* 1991–1992

Objective	Year 2000 Target [†]	Asian and Pacific Islander		White	
		%	(SE) [‡]	%	(SE) [‡]
Women aged 18 years and older: ever had a Pap smear [§]	≥ 95%	67.6	(1.87)	72.5	(0.23)
had within the preceding 2 years [§]		58.4	(1.89)	62.3	(0.25)
Women aged 40 years and older: ever had a clinical breast examination and mammogram	≥ 80%	60.4	(3.08)	70.7	(0.31)
Women aged 50 and older: Had a clinical breast examination and mammogram within the preceding 2 years	≥ 60%	48.5	(4.22)	57.7	(0.39)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]Screening practices recommended in *Healthy People 2000*: specific targets given in objective 16.12 (Pap smear) and objective 16.11 (clinical breast examination and mammogram).

[‡]Standard error.

[§]For women with an intact uterine cervix.

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

clinical and personal preventive health behaviors, public health professionals should focus attention on increasing leisure-time physical activity, measuring cholesterol levels and blood pressure, screening for cervical and breast cancers, and improving general access to preventive services.

Because these risk factors are widespread in the general U.S. population and are not unique to minority groups, outreach to Asian and Pacific Islanders should be pursued within the context of broad-based intervention efforts aimed at all Americans.

The limitations of the BRFSS approach must be borne in mind when making inferences about minority groups (Appendix F). Persons

who live in states that do not participate in the BRFSS and persons without telephones are not represented in this survey. Moreover, the sample of Asians and Pacific Islanders in the BRFSS is too small and, with the exception of Hawaii, not sufficiently detailed to examine the potentially heterogeneous profiles of risk factors and preventive practices that may be present among ethnic subgroups of Asian and Pacific Islanders.

SUMMARY

Because reliable data on chronic disease burden and risk factors are still lacking for a substantial number of the Asian and Pacific Islander ethnic groups, we can make only tentative conclusions,

Table 4.14—Prevalences of self-reported routine checkup and access to care among Asian and Pacific Islander adults and white adults aged 18 years and older, United States,* 1991–1992

Indicator	Women				Men			
	Asian/ Pacific Islander		White		Asian/ Pacific Islander		White	
	%	(SE) [†]	%	(SE) [†]	%	(SE) [†]	%	(SE) [†]
Routine checkup within the past year [‡]	73.1	(1.62)	77.0	(0.21)	61.5	(1.93)	61.6	(0.29)
More than one year/ less than 2 years	13.2	(1.21)	10.4	(0.15)	15.1	(1.46)	14.2	(0.20)
More than 5 years ago	4.7	(0.78)	5.3	(0.12)	9.2	(1.17)	11.1	(0.18)
Never had routine checkup	3.3	(0.65)	1.8	(0.07)	5.1	(0.89)	3.0	(0.11)
Unable to see a doctor during preceding year because of the cost [§]	9.5	(1.02)	14.3	(0.18)	8.3	(1.06)	9.5	(0.18)
Lack of health care plan	15.7	(1.45)	12.5	(0.18)	17.5	(1.59)	15.1	(0.23)
Health plan does not cover checkups or other preventive services [¶]	15.7	(1.47)	19.9	(0.21)	16.6	(1.71)	19.3	(0.24)

* State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†] Standard error.

[‡] About how long has it been since you last visited a doctor for a routine checkup?

[§] Was there a time during the last 12 months when you needed to see a doctor, but could not because of the cost?

^{||} Do you have any kind of health care plan? (Health care plan was described as health insurance, prepaid plans such as health maintenance organization (HMO), or government plans, such as Medicare.)

[¶] When you are not sick, does your health care plan cover all, most, some, or none of your checkups or other preventive services?

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

implications, and recommendations. Although the disease burden and risk profile for this population is incomplete, we can expect that Asians and Pacific Islanders are like other Americans in at least one important respect—poor education, poor diet, poor access to quality medical care, exposure to hazardous lifestyles and environments, stressful life events, and social and cultural changes are likely to be associated with higher rates of mortality, morbidity, and disability.¹

This section of the book highlights a few conclusions, implications, and recommendations drawn from the preceding six sections.

Population. Unlike the majority U.S. population, the Asian and Pacific Islander population is younger, is faster-growing, and is more likely to include recent immigrants. Although six large ethnic subgroups account for 84 percent of the population, persons with the greatest burden of disease, the least amount of private resources, and the greatest need for preventive interven-

tions are likely to be among the less numerous subgroups, such as Native Hawaiians and recent immigrants from Southeast Asia (Vietnam, Cambodia, and Laos). Health information on Asian Indians and Koreans, the third and fourth largest subgroups, is virtually nonexistent.

Life expectancy and mortality. In 1990, IHD, lung cancer, stroke, and breast cancer consistently ranked highest among the 10 leading causes of death due to chronic disease among Asian and Pacific Islanders. Hawaii's life expectancy data showed that in the early 1980s, ethnic Chinese, Japanese, and Filipinos experienced lower mortality rates and longer life expectancy than did Native Hawaiians, part Hawaiians, and whites. Despite these findings, there is still room for improvement among the economically disadvantaged subgroups, such as Native Hawaiians and recent immigrants.

Morbidity and health-related quality of life. The high prevalence of hypertension and diabetes among Asian and Pacific Islander men and women is consistent with the role of those conditions as biological risk factors for IHD and stroke, two of the leading causes of death among Asians and Pacific Islanders. In each age group examined, self-report of fair or poor health and of limitation of major activity due to chronic conditions confirmed our expectation that the chronic conditions reported at high prevalence were clinically significant and severe enough to affect health status and impose activity limitations.

Because cancer incidence and survival data by anatomic site were so different across ethnic subgroups, we conclude that different ethnic subgroups may want to assign different priorities to the prevention and control of cancer of each anatomic site.

Risk factors and preventive health practices. Of the risk factors and preventive health practices examined, year 2000 prevalence targets have not

been met for cigarette smoking among men; among women, the targets for having had a Pap smear and for having had a clinical breast examination and mammogram have not been met. The targets for the prevalence of cigarette smoking were met by women aged 18 years and older. However, the status of these risk factors among ethnic subgroups remains unknown. Although equal percentages of men and women reported barriers to the use of preventive services—no health care plan, a plan that does not cover preventive services, and high cost of a doctor visit—a higher percentage of women than of men reported having had a routine checkup within the past year.

RECOMMENDATIONS

Special data collection efforts are required because of the ethnic diversity among the Asians and Pacific Islanders, the small size of some ethnic subgroups, and the population dynamics described above. Data collection should include information on country of birth, year of immigration, language, education, individual income, employment status, and occupation among Asians and Pacific Islanders.² Without this level of detailed information, public health problem definition and intervention development will continue to be less than optimal.

Programs aimed at reducing the impact of chronic diseases in this population must anticipate future growth in disease burden as the young population ages and recent immigrants adopt new unhealthy lifestyles, must be responsive to chronic health problems more common among some immigrant groups (cancer of the nasopharynx, stomach, and liver), and must focus attention in those states where the population is concentrated. Separate large- and small-group strategies for problem definition and program development are needed to meet

the needs of the larger groups without neglecting the smaller or less frequently studied subgroups.

Existing national programs for the early detection and control of hypertension, diabetes, and asthma should give attention to the unique needs of Asians and Pacific Islanders. If these programs are effective in reaching large numbers of Asians and Pacific Islanders with these conditions, health care costs and premature deaths can be reduced, and quality of life improved.

Because different ethnic subgroups of Asians and Pacific Islanders are likely to have different profiles of risk factors and barriers to the use of preventive services, effective interventions must be tailored to fit the needs of each ethnic subgroup. Cross-cultural studies are needed to determine if, for example, techniques that help Vietnamese men to quit smoking will also help Native Hawaiian men to quit smoking.

Chronic disease prevention and control efforts must focus simultaneously on prevention of premature death among subgroups with

lower life expectancy as well as on the improvement of quality of life among subgroups at all levels of life expectancy. However, efforts to prevent premature death from the leading causes of death should be given highest priority for research, resources, and interventions on risk factors, in order to fully realize Year 2000 national goals in these problem areas.

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5 HISPANIC AMERICANS

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THE POPULATION

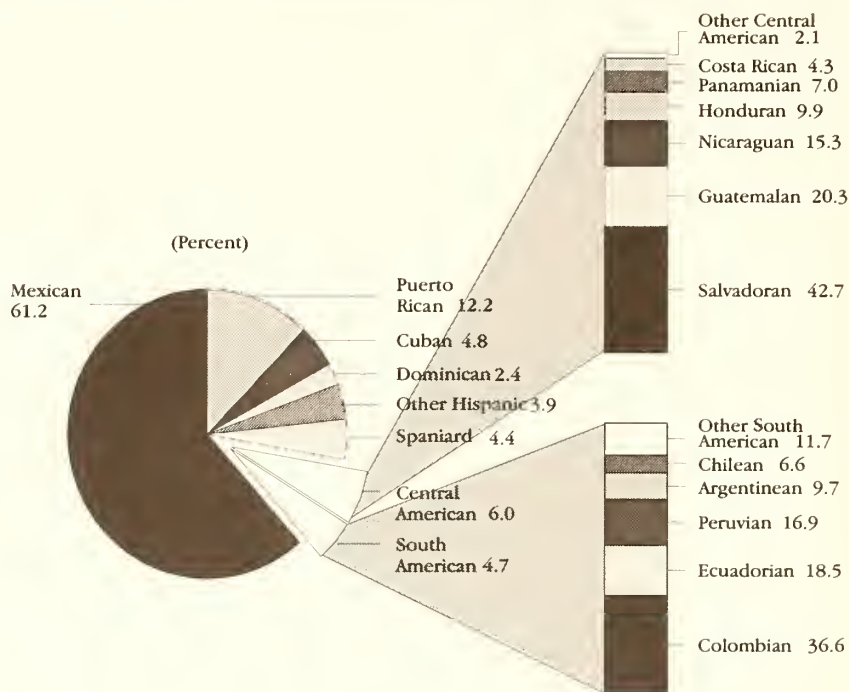
The ethnic label *Hispanic* is used to summarize information about people of all races whose ancestry can be traced to Spain, Mexico, Puerto Rico, Cuba, or to any of the Spanish-speaking Latin American countries. The 1990 census enumerated 22.4 million Hispanics classified as Mexican Americans, Puerto Ricans, Cuban Americans, and about 30 additional Hispanic-origin groups aggregated as *Other Hispanics*.¹ Presenting information about the Hispanic population as a whole conceals the diversity among people of Hispanic descent. Some of the diversity within the Hispanic population is illustrated through statistical profiles of Hispanic subgroups. Mexican Americans represented about 61 percent of the nation's Hispanic population in 1990, whereas Puerto Ricans and Cuban Americans accounted for about 12 percent and 5 percent, respectively (Figure 5.1). The category of *Other Hispanics* is the most heterogeneous group because it includes all other people of Central American origin (i.e., Salvadoran, Guatemalan, Nicaraguan, Honduran, Panamanian, and Costa Rican) or South American origin (i.e., Colombian, Ecuadorian, Peruvian, Argentinean, and Chilean), as well as those of Spanish origin.

SEPARATE CLASSIFICATION OF RACE AND HISPANIC ETHNICITY

Current estimates of the Hispanic population are based on a census question on Hispanic ethnicity. This question is separate from the question on race (see Figure A.1 and Figure A.2 in Appendix A). However, the distinction between race and Hispanic ethnicity was not clear to many Hispanic respondents. More than 40 percent of respondents who claimed Hispanic ethnicity in the 1990 census chose *other race* rather than one of the choices provided by the census: white, black, American Indian, Eskimo, Aleut, Asian or Pacific Islander. The Bureau of the Census has shown that one reason behind the choice of *other race* is that some Hispanics identify themselves racially as Hispanics.² Of the nearly 10 million people who chose *other race* in the 1990 census, more than 95 percent were of Hispanic origin.³

In this book, 1990 census estimates for racial categories among Hispanics were generated using the age- and race-modified census data file (Appendix A, part III). The age- and race-modified data tape was created by researchers at the Bureau of the Census. A rule for assigning race was used to classify respondents who reported *other race* into one of the four racial groups.⁴ Because some census reports use the

Figure 5.1—Hispanic population, by ethnic group, United States, 1990



Source: Bureau of the Census, *We, the American Hispanics*, 1993.

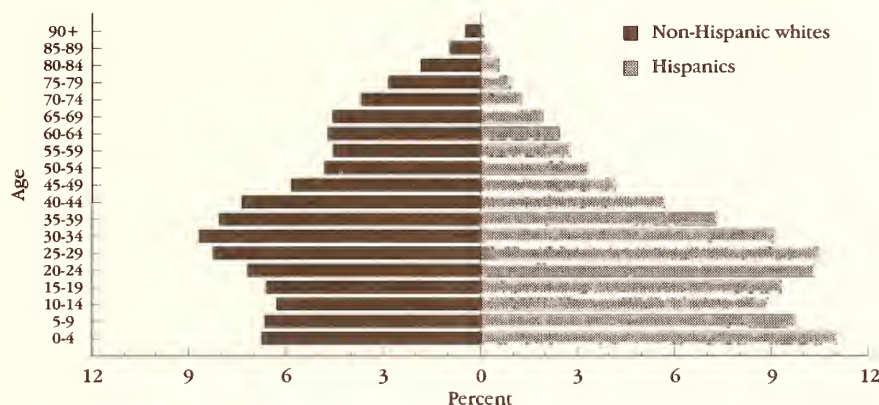
unmodified census data tape—a race is not assigned to individuals who reported *other race*—the estimates on the Hispanic population that are presented in this publication may differ slightly from estimates in census publications based on the unmodified data tape.

Analyses using the 1990 census age- and race-modified data tape showed that 91.3 percent of the Hispanic population were white, 5.4 percent were African-American, 1.2 percent were American Indian or Alaska Native, and 2.1 percent were Asian or Pacific Islander, whereas 83.1 percent of persons in the non-Hispanic population were white, 12.9 percent were African-American, 0.8 percent were American Indian or Alaska Native, and 3.1 percent were Asian or Pacific Islander.

POPULATION SIZE AND GROWTH

The Bureau of the Census reported 14.5 million Hispanics in 1980 and 22.4 million in 1990. The increase in the number of Hispanics in the United States is attributable to a high fertility rate and continued immigration from Mexico, Central America, the Caribbean, and South America. The youthful age distribution (*Figure 5.2*), coupled with the high birthrate and the high immigration rates in the Hispanic population has led to the prediction that the Hispanic population will continue to grow at a more rapid rate than will the non-Hispanic white population (see *Table A.1* in Appendix A). About 82 percent of the Hispanic population is less than 45 years old, whereas about 66 percent of the non-Hispanic white population is less

Figure 5.2—Age distribution of the Hispanic population* and the non-Hispanic white population, United States, 1990



*Hispanics can be of any race.

Source: Bureau of the Census, 1990.

than 45 years old (*Table 5.1*). Within the Hispanic population, Mexican Americans have the lowest median age and highest fertility rate, and Cuban Americans have the highest median age and the lowest fertility rate.

Demographers estimate that after 1995, the Hispanic population will add more people to the United States each year than will the non-Hispanic white population; by 2010, the Hispanic population will surpass the non-

Table 5.1—Age distribution of the Hispanic population and the non-Hispanic white population, United States, 1990

Age Group (years)	Hispanics %	Non-Hispanic Whites %
< 15	29.7	19.7
15-44	52.4	46.1
45-64	12.8	19.9
65-84	4.7	12.9
85+	0.4	1.4

Source: Bureau of the Census, 1990.

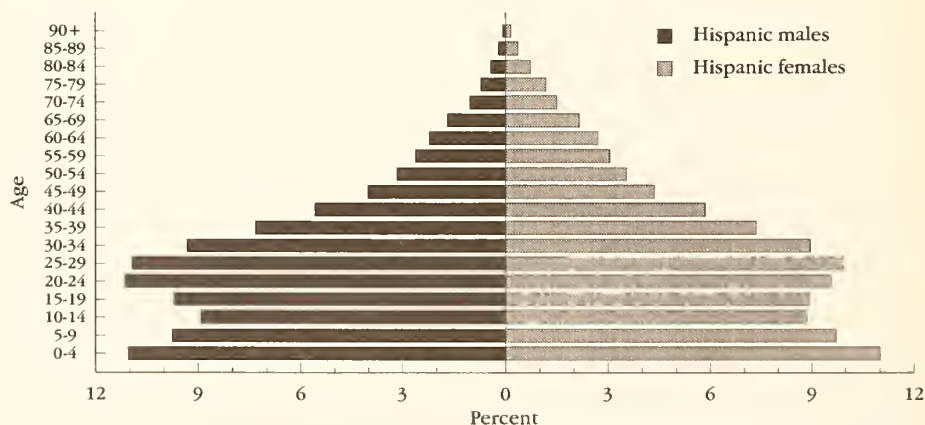
Hispanic African-American population as the largest minority group.⁵ By the year 2050, demographers project that 22.7 percent of the total U.S. population will be Hispanic, 51.3 percent will be non-Hispanic white, and 14.3 percent will be non-Hispanic African-American. These projected percentages are in contrast to the 1990 population estimates of 9.0 percent for Hispanics, 75.7 percent for non-Hispanic whites, and 11.8 percent for non-Hispanic African-Americans.

Although a higher percentage of women than men are in the older age groups, the distributions across the 5-year age groups are similar for men and women (*Figure 5.3*). The male:female ratio for those aged 15–44 years reflects larger numbers of young Hispanic men than women among U.S. immigrants (*Table 5.2*). As with the non-Hispanic white population, the male deficit becomes progressively larger after age 45 years among Hispanics. The male deficit is not as marked for Hispanics aged 85 years and older.

MIGRATION PATTERNS

Some of the diversity in health status found across and within the Hispanic subgroups can be traced to differences in migration histories, length of time in the United States, and sociodemographic factors related to migration.⁶ Mexican Americans have a longer history in the United States than do other groups of Hispanic origin, as well as a wider variety of methods of entry. The ancestors of some Mexican Americans did not migrate to the United States but became part of the nation by conquest in 1848 when, at the close of the Mexican-American War, Mexico ceded land that became the states of Arizona, California, New Mexico, Utah, Texas, and parts of Colorado and Nevada. The migration histories of other Mexican Americans range from people whose ancestors migrated in the mid-1800s to present day immigrants. Genetic studies show that considerable admixture between Mexican Americans and American

Figure 5.3—Age distribution of Hispanic males and females, United States, 1990



Source: Bureau of the Census, 1990.

Table 5.2. —Age-specific male:female ratios for the Hispanic population and the non-Hispanic white population, United States, 1990*

Age Group (years)	Hispanics	Non-Hispanics Whites
< 15	104.3	105.7
15–44	111.1	101.2
45–64	91.3	94.3
65–84	72.2	71.4
85+	54.9	37.5

*The male:female ratio is the number of males per 100 females.

Source: Bureau of the Census, 1990.

Indians has taken place. Census estimates for Mexican Americans are probably low because a large number of undocumented immigrants who are undercounted are from Mexico.

Puerto Rico was designated a U.S. territory at the end of the Spanish-American war in 1898 and a Commonwealth in 1952. As U.S. citizens, Puerto Ricans differ from Mexican Americans and Cuban Americans in that they have no immigration restrictions; this facilitates a circular migration pattern between Puerto Rico and the mainland. Some Puerto Ricans have a sense of belonging to both places because of frequent cycling between the island and the mainland. The back and forth migration is particularly common among people in lower socioeconomic groups.

The ebb and flow of migration rates from Mexico and Puerto Rico has been influenced by the labor market demands of the United States and economic situations in Mexico and Puerto Rico, whereas political forces have been more important in migration from Cuba. The United States annexed Cuba in 1898 at the close of the Spanish American War, but by 1902 the Independent Republic of Cuba was created. Most

Cuban Americans have migrated to the United States since the late 1950s. The first large wave of immigrants, those seeking to leave Cuba when Fidel Castro came to power, were welcomed as political refugees by the U.S. government and given substantial support through the Cuban Refugee Assistance Program. Later groups of immigrants were able to rely on well-established Cuban communities in Florida when they arrived in the United States.

Immigration status of members greatly influences the health status of groups of people because children of immigrants tend to have different health problems than those of their parents. Nationwide, approximately 64 percent of Hispanics were born in the United States. Texas and New Mexico have high percentages of second and third generation Hispanic Americans as well as concentrations of Hispanics whose ancestors lived in the area before the Mexican-American war in the mid-1800s. However, about 43 percent of all the foreign-born persons in the United States are from Mexico, Central America, the Caribbean, and South America. About half of foreign-born Hispanics entered the United States between

1980 and 1990.⁴ Florida, California, and Illinois have high percentages of foreign-born Hispanics.

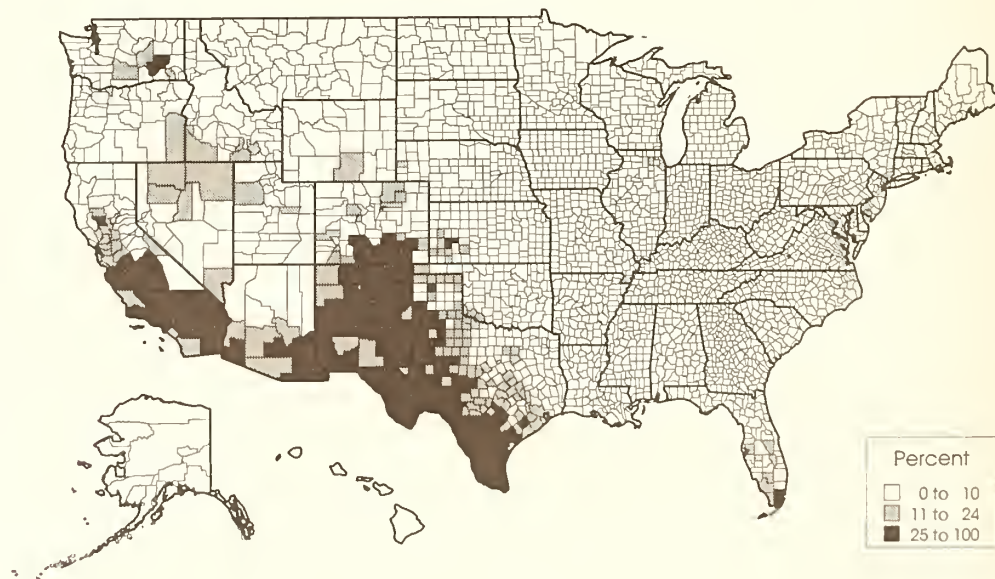
GEOGRAPHIC DISTRIBUTION

Nineteen states have one or more counties in which the Hispanic population is greater than 10 percent of the county population (see *Table A.5* in Appendix A for a listing of the specific counties by state). Large concentrations of Hispanics live in the southwestern states as shown by the number of counties in the Southwest in which the Hispanic population comprises 25 percent or more of the county population (*Figure 5.4*). The 1990 census shows that 16.8 percent of Hispanics live in the Northeast, 7.7 percent live in the Midwest, 30.3 percent live in the South, and 45.2 percent live

in the West. About 65 percent of Hispanics live in California, New York, and Texas, and another 25 percent live in Arizona, Colorado, Florida, Illinois, New Jersey, and New Mexico.

Puerto Ricans, Cubans, and Mexican Americans are not dispersed evenly within the areas heavily populated by Hispanics but are concentrated in regions of the country: 68.9 percent of Puerto Ricans live in the Northeast, 70.5 percent of Cubans live in the South, and 58.0 percent of Mexican Americans live in the West. Most of the Mexican American population live in five southwestern states: Arizona, California, Colorado, New Mexico, and Texas. Puerto Ricans are concentrated in the northeastern states, particularly in New York and New Jersey. A high proportion of Cuban Americans live in the Miami area of Florida. Other Hispanics are

Figure 5.4—Percentage of Hispanics in U.S. counties, 1990



See *Table A.5* for a list of the shaded counties.

Source: Bureau of the Census, 1990.

concentrated in different regions: Dominicans in New York and New Jersey; Colombians in New York and Florida; Guatemalans in Los Angeles; Salvadorans in Los Angeles, the District of Columbia, and Houston; and Nicaraguans in Miami.

About 92 percent of Hispanic households are in urban areas, whereas 73 percent of non-Hispanic households are in urban areas. Hispanics are likely to be concentrated in the central cities of the largest metropolitan areas with two-thirds of Hispanics living in just 16 metropolitan areas.⁷

ETHNIC DIVERSITY

Although people of Hispanic origin are united by a common language, typically have a Catholic religious background, and are characterized as emphasizing family relationships, there is no one Hispanic culture. Country of origin, recency of immigration, and geographical location within the United States contribute to the cultural diversity within the Hispanic population. The Spanish language unites most people of Hispanic descent, but a wide array of preferences and ability exists among these people in their use of Spanish and English in speaking, reading, and writing. For example, almost 78 percent of Hispanics speak Spanish at home; only about half reported that they were able to speak English *very well*.⁴

SOCIOECONOMIC INDICATORS

Great socioeconomic diversity exists across and within the Hispanic population subgroups. One marketing service recently developed a plan for tapping the Hispanic market in which the U.S. Hispanic population was divided into 18 subgroups that included factors such as origin, income, age, and living status.⁸ Overall, the median family income for Hispanics (\$25,064) was lower than that for all Americans (\$35,225).

Educational attainment was also lower for Hispanics than for non-Hispanics.⁷ Among the three main subgroups, indicators of high socioeconomic status, such as years of formal education, income, and home ownership, were highest for Cuban Americans and lowest for Puerto Ricans.⁴ Unemployment rates, poverty rates, and the percentages of households maintained by women were highest among Puerto Ricans.

HEALTH CARE

Some Hispanics believe that health is a state of balance in the body and disease a state of imbalance. The hot-cold theory of disease is an example of medical treatment restoring balance: illnesses classified as hot are treated with a cold liquid and cold illnesses are balanced by treating with a hot liquid.⁹ Because drug laws vary by country, foreign-born Hispanics may be used to having a wide range of over-the-counter medications and to having pharmacists prescribe medicines that need a prescription by a physician in the United States. Some Hispanic Americans may still have access to a wide supply of medicines without consulting a physician through relatives who live in Latin American countries. A fatalistic attitude about their chances of getting cancer or about the benefits of screening and treatment may affect health behavior and cause a delay in seeking medical care for symptoms.

Other problems may interfere with receiving adequate health care services. Language barriers between Hispanic patients and non-Hispanic health professionals may prevent some persons from obtaining adequate health care services. Even if the health care professional is Hispanic, different Spanish idioms and cultural norms among the Hispanic subgroups may hamper communication.¹⁰ The available health education materials may not meet the varying needs

of those with different language skills. Economic barriers to receiving adequate health services include high medical costs and lack of health insurance. Lack of continuity in medical records and health care services is a detriment to good health care, particularly for migrant farm workers and for Puerto Ricans who move frequently between the island and the mainland.

PUBLIC HEALTH IMPLICATIONS

Currently, the dominant public health issues are related to maternal and child health, infectious disease, and injuries, but the impact of chronic disease within the Hispanic community is expected to increase in the next 20 years as larger numbers of people move into the older age groups. The decline in the male:female ratio beginning at age 45 years presents a twofold public health challenge: premature death among Hispanic men and a longer period of living with chronic disease and subsequent disability among Hispanic women. The health concerns of Hispanic men and women aged 45 years and older will need to be addressed through both research and service programs. On the positive side, the large percentage of Hispanics under the age of 15 years offers great potential for chronic disease prevention and health promotion through school and community interventions that target Hispanic children and adolescents.

Years of formal education, income, and length of time the family has lived in the United States may be more important than Hispanic ethnicity in influencing attitudes toward the health care system and health behavior. However, the effectiveness of disease prevention programs and treatment regimens in Hispanic populations does depend on an awareness of cultural influences.⁹ Just as marketers are using demographic analyses to sell products within the diverse Hispanic market, public health practi-

tioners need to tailor programs to meet the unique needs of the different subgroups within the Hispanic population. The challenges facing county and state health departments to meet the needs of their Hispanic constituencies vary widely across the United States because of the regional concentrations of Hispanic subgroups. Effective community interventions must be tailored for the specific Hispanic ethnic subgroups within a geographic area rather than trying to use generic Hispanic intervention programs.

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LIFE EXPECTANCY

Life expectancy at birth is the primary measure used to express the number of years a newborn child can expect to live given the prevailing mortality pattern. Currently, national estimates of life expectancy for Hispanics are not available, but these estimates will be available in 1995 (NCHS, Jeffrey D. Mauer, MS, 1994). Estimates of life expectancy at birth are available for the total population of the territory of Puerto Rico and for Hispanics in the state of Texas (Appendix B).

In Puerto Rico, life expectancy at birth for men has increased from 29.8 years in 1902 to 69.6 years in 1991. Women have shown a similar increase over the same time period: 31.0 years to 78.5 years.¹ Slight decreases have

occurred among both men and women in the estimates of life expectancy at birth during the past five years. For men, the estimate of life expectancy at birth decreased from 71.1 years in 1987 to 69.6 years in 1991. The estimate of 78.5 years for life expectancy at birth in 1991 for women had dropped from an estimate of 79.4 years in 1987.

Among residents of Texas, recent estimates of life expectancy at birth for Hispanics are similar to those of non-Hispanic whites and higher than non-Hispanic African-Americans (*Table 5.3*). Life expectancy for Hispanic males born in 1992 is 74.0 years, 74.5 years for non-Hispanic white males, and 65.9 years for non-Hispanic African-American males. Life expectancy at birth for 1992 is 79.2 years for Hispanic females, 79.4 years for non-Hispanic white females, and 74.0 years for non-Hispanic African-American females.²

In Texas, Hispanic life expectancies at birth show the greatest improvement of all racial/ethnic groups over the past 20 years. Until 1980, non-Hispanic whites had higher life expectancies at birth than did Hispanics and African-Americans. In the early 1980s, however, Hispanics gained a slight advantage over non-Hispanic whites.³ This gain may be due, in part, to inconsistencies in the enumeration of births and deaths of Hispanic infants along the Rio Grande border. Infants born to citizens of Mexico are enumerated in the count of Texas births if they are born in Texas. Some of these infants who later return to Mexico may not survive, but they would not be counted in the enumeration of deaths in Texas. This could result in an inflated statistical life expectancy at birth for Hispanics in Texas.

Life expectancy estimates for Hispanics in Texas may not reflect national patterns or patterns in other regions of the United States although life expectancy for the state has been close to or higher than the United States average

Table 5.3—Life expectancy at birth for selected years, by race and Hispanic ethnicity and sex, Texas, 1970–1992

Year	White		African-American		Hispanic	
	Male	Female	Male	Female	Male	Female
1970	69.4	77.3	61.5	69.1	68.3	74.0
1975	71.3	78.4	64.3	71.9	70.7	77.0
1980	72.3	78.8	65.1	73.2	70.9	78.2
1985	73.1	79.3	66.8	74.3	73.9	80.0
1988	73.9	79.7	67.2	74.6	74.5	80.0
1989	74.2	79.9	66.3	74.3	73.9	79.7
1990	72.2	79.1	64.9	73.9	73.2	80.0
1991	74.1	79.7	66.4	74.4	74.7	80.2
1992	74.5	79.4	65.9	74.0	74.0	79.2

Source: Bureau of Vital Statistics, Texas Department of Health, 1993.

since 1950.² If national life expectancy estimates for Hispanics are similar to the life expectancy estimates of Hispanics in Texas, the number of Hispanic Americans who are more than 65 years old will continue to grow.

The impact of specific chronic diseases on longevity among Hispanics is examined from the perspective of mortality rates in the next section.

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MORTALITY

Mortality data are used to identify the leading causes of death among subgroups. By examining sex-, age-, and cause-specific mortality rates by

racial/ethnic group for the most important chronic diseases, public health planners can determine how best to meet mortality-related national goals of increasing the span of healthy life and of reducing health disparities among Americans. The focus is on middle-aged and elderly populations because the burden of premature death from chronic diseases and the opportunities for prevention and control are greater in these populations than in younger populations.

The following section presents age-specific and age-adjusted 1990 mortality rates by sex for Hispanic and non-Hispanic adults for 10 chronic diseases: chronic obstructive pulmonary disease (COPD), cirrhosis, colorectal cancer, diabetes, ischemic heart disease (IHD), lung cancer, stroke, breast cancer, cervical cancer, and prostate cancer (see Appendix C for ICD-9 codes).

AGE-SPECIFIC MORTALITY RATES

Women. Although the 1990 estimates of death rates from IHD are lower for Hispanic women than for non-Hispanic women, IHD is

the leading cause of death among both Hispanic and non-Hispanic women aged 45 years and older (*Table 5.4*). Diabetes and lung cancer are the two diseases that differ most markedly for Hispanic and non-Hispanic women in ranking and in cause-specific mortality rate. The mortality rate due to lung cancer is about 2.7 times higher for non-Hispanic women than for Hispanic women in the 45–64 age category and about 1.7 times higher in the 65 years and older age category. The mortality rate due to diabetes

is about 1.5 times higher for Hispanic women than for non-Hispanic women in both age groups.

The age-specific mortality rates for most of the chronic diseases are at least four times higher among Hispanic women in the 65+ age group than for those in the 45–64 age category. The mortality rates for cirrhosis and breast cancer are only about twice as high among women in the older age group as among women in the younger age group. IHD has the largest age differential—

Table 5.4—Rank order of age-specific crude mortality rates for major chronic diseases as underlying cause of death for Hispanic women and non-Hispanic women, United States, 1990*

Persons Aged 45–64 Years		Persons Aged 65 Years and Older	
Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
Ischemic heart disease (67.3)	Ischemic heart disease (81.7)	Ischemic heart disease (1169)	Ischemic heart disease (1171)
Breast cancer (48.7)	Lung cancer (70.0)	Stroke (335.4)	Stroke (425.6)
Stroke (29.7)	Breast cancer (61.4)	Diabetes (186.9)	Lung cancer (178.4)
Diabetes (28.4)	Stroke (28.4)	Lung cancer (125.0)	COPD† (169.8)
Lung cancer (26.4)	COPD† (24.1)	Breast cancer (113.4)	Breast cancer (134.1)
Cirrhosis (20.3)	Colorectal cancer (21.8)	COPD† (111.2)	Colorectal cancer (122.2)
Colorectal cancer (15.1)	Diabetes (19.4)	Colorectal cancer (101.0)	Diabetes (112.3)
COPD† (12.7)	Cirrhosis (13.5)	Cirrhosis (46.6)	Cirrhosis (23.8)
Cervical cancer (2.3)	Cervical cancer (2.7)	Cervical cancer (9.7)	Cervical cancer (12.8)

*Rate per 100,000 persons.

†COPD—Chronic obstructive pulmonary disease.

Source: CDC, National Center for Health Statistics, National Vital Statistics System, 1990.

the mortality rate among women in the 65+ age category is 17.4 times higher than the rate among women in the 45–64 age category.

Men. As with non-Hispanic men, IHD is the leading cause of death among Hispanic men aged 45 years and older (*Table 5.5*). For men in the 45–64 age group, cirrhosis and lung cancer are the two diseases that differ most markedly for Hispanic and non-Hispanic men in terms of ranking and cause-specific mortality rate. The mortality rate due to lung cancer is about twice as high for non-Hispanic men as for Hispanic men, whereas the mortality rate due to cirrhosis

is slightly more than twice as high for Hispanic men as for non-Hispanic men. Among men 65 years old and older, the rank order of the eight chronic diseases is the same among Hispanics and non-Hispanics. However, the cause-specific mortality rate is higher for non-Hispanics than for Hispanics for all the diseases except diabetes and cirrhosis.

Among Hispanic men, the age-specific mortality rates for these chronic diseases are at least five times higher among men in the 65+ age group than among those in the 45–64 age group; the mortality rate for cirrhosis for men in

Table 5.5—Rank order of age-specific crude mortality rates* for major chronic diseases as underlying cause of death for Hispanic men and non-Hispanic men, United States, 1990.

Persons Aged 45–64 Years		Persons Aged 65 Years and Older	
Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
Ischemic heart disease (180.8)	Ischemic heart disease (240.9)	Ischemic heart disease (1484)	Ischemic heart disease (1568)
Cirrhosis (71.5)	Lung cancer (136.4)	Lung cancer (354.4)	Lung cancer (479.6)
Lung cancer (65.7)	Stroke (35.2)	Stroke (316.8)	Stroke (376.4)
Stroke (38.1)	COPD† (32.9)	COPD† (238.6)	COPD† (339.2)
Diabetes (30.8)	Cirrhosis (31.9)	Prostate cancer (191.5)	Prostate cancer (235.7)
Colorectal cancer (22.8)	Colorectal cancer (30.7)	Colorectal cancer (145.0)	Colorectal cancer (166.3)
COPD† (15.0)	Diabetes (21.7)	Diabetes (180.4)	Diabetes (108.5)
Prostate cancer (8.0)	Prostate cancer (13.9)	Cirrhosis (87.5)	Cirrhosis (45.2)

*Rate per 100,000 persons.

†COPD = Chronic obstructive pulmonary disease.

Source: CDC, National Center for Health Statistics, National Vital Statistics System, 1990.

the older age group is only 1.2 times higher than the rate for men in the younger age group. COPD has the largest age differential: the mortality rate for persons in the 65+ age category is 15.9 times higher than the rate for persons in the 45–64 age category.

Comparison of men and women. Among Hispanic men aged 45–64 years, cirrhosis and lung cancer are the second and third leading causes of death, respectively, whereas among Hispanic women in this age category, lung cancer is the fifth and cirrhosis the sixth leading cause of death (*Tables 5.4 and 5.5*). For cirrhosis, the mortality rate for Hispanic men was more than three times higher than that of Hispanic women, and for lung cancer, it was more than twice as high for Hispanic men than for Hispanic women. Among Hispanic adults aged 65 years and older, the lung cancer mortality rate was almost three times higher for men than for women. Although the mortality rate due to COPD was about the same for Hispanic men and women in the younger age group, the mortality rate due to COPD was just over twice as high for Hispanic men than for Hispanic women in the older age category.

AGE-ADJUSTED MORTALITY RATES

Mortality rates were adjusted to the 1980 standard U.S. population and to the 1940 standard U.S. population. The text and figures refer to rates based on the 1980 standard. Mortality rates for both standards are given in *Tables C.4 and C.7* in Appendix C.

Women. Age-adjusted mortality rates for IHD, diabetes, and cirrhosis are higher for Hispanic women than for non-Hispanic women (*Figure 5.5*). Although the age-adjusted mortality rate for IHD is only slightly higher for Hispanic than for non-Hispanic women (147.1 versus 131.8), the age-adjusted mortality rates for cirrhosis and diabetes are 1.7 times higher

for Hispanic women than for non-Hispanic women (see *Table C.4* in Appendix C). The age-adjusted mortality rate for lung cancer is about twice as high for non-Hispanic women as for Hispanic women.

Men. Age-adjusted mortality rates for Hispanic men are slightly lower than those for non-Hispanic men for all the conditions examined except for cirrhosis and diabetes (*Figure 5.6*). The age-adjusted mortality rate for cirrhosis and diabetes are 2.2 and 1.6 times higher for Hispanic men than for non-Hispanic men.

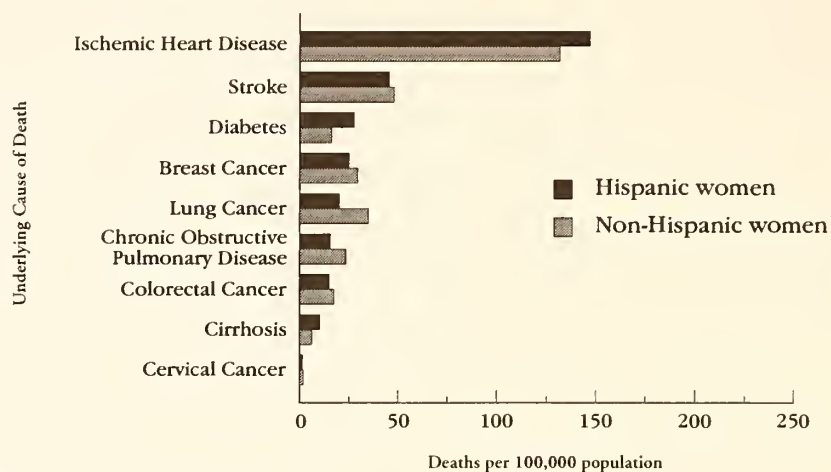
Comparison of men and women. The age-adjusted cause-specific mortality rates are higher for men than for women for all seven diseases examined; the male:female rate ratios are above 1.5 for five of the seven diseases: lung cancer (2.83), cirrhosis (2.78), COPD (2.13), IHD (1.53), and colorectal cancer (1.53).

IMPLICATIONS FOR PUBLIC HEALTH

Culturally based and scientifically sound interventions to reduce modifiable risk behaviors associated with these diseases should lead to a reduction in subsequent morbidity and premature mortality. Community interventions designed to reduce death rates among Hispanic Americans due to these chronic diseases should reflect an awareness of the education level, preferred language, and social context of the group for whom the intervention is designed. Healthy behaviors among Hispanics need to be promoted and maintained. For example, the lower lung cancer rates for Hispanics than for non-Hispanics are thought to be due to lower rates of cigarette smoking among Hispanics.

Risk reduction programs should also include strategies for reducing alcohol consumption because of the strong association between heavy alcohol consumption and cirrhosis. Combined strategies to reduce alcohol consumption in Hispanic communities are needed because

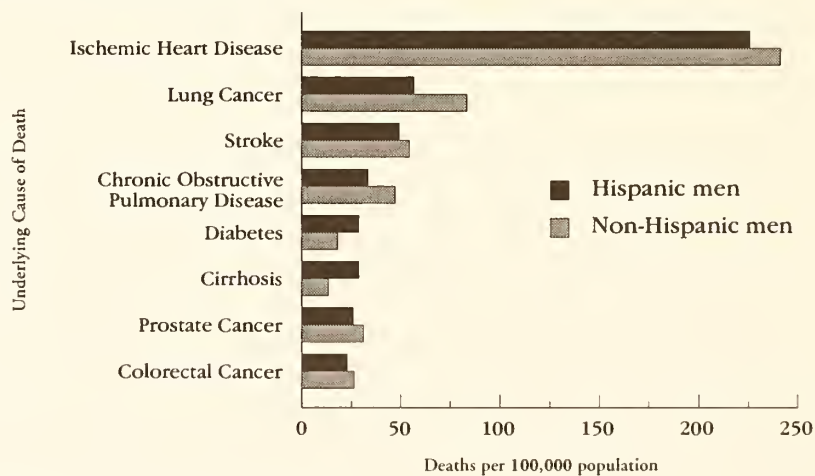
Figure 5.5—Age-adjusted cause-specific mortality rates* for Hispanic women and non-Hispanic women, by underlying cause of death, United States, 1990



*Age-adjusted to the 1980 U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

Figure 5.6—Age-adjusted cause-specific mortality rates* for Hispanic men and non-Hispanic men, by underlying cause of death, United States, 1990



*Age-adjusted to the 1980 U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

cirrhosis is largely a preventable disease that has a high death rate at young ages for both men and women.

MORBIDITY

The goals of chronic disease prevention and control are to reduce the incidence of disease, to reduce the severity of illness, to delay the onset of disability, and to increase the span of healthy life. Population-based measures of morbidity and quality of life, together with measures of mortality and life expectancy, are important for monitoring progress toward the achievement of those goals.¹ Traditional epidemiologic measures of morbidity include incidence and prevalence. However, detailed quality data sources for these measures of morbidity are rarely available for most chronic diseases of national importance, and seldom adequately cover racial and ethnic minority groups.

Crude prevalence estimates from the National Health Interview Survey (NHIS, 1986–1990) for hypertension, asthma, chronic bronchitis, diabetes, stroke, IHD, emphysema, and liver diseases are presented to show the actual burden of these chronic conditions in the populations. Age-adjusted estimates are presented to show the effect of the different age structures in the Hispanic and non-Hispanic populations.

Data are presented from the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute about the incidence of selected cancers and the 5-year relative survival among Mexican American and non-Hispanic whites who have these cancers (see *Table D.1* in Appendix D).

PREVALENCE OF SELECTED CHRONIC CONDITIONS

Women. For both the crude and age-adjusted estimates, self-reported hypertension is the most

prevalent chronic condition among Hispanic and non-Hispanic women (*Table 5.6*). The almost threefold higher crude prevalence of hypertension among non-Hispanic women does not persist when adjusted for age. Crude estimates for stroke and IHD are roughly two times higher among non-Hispanic women than among Hispanic women. However, when adjusted for age, Hispanic women have about the same prevalence of stroke as that of non-Hispanic women and a twofold higher prevalence of IHD.

Both crude and age-adjusted estimates for chronic bronchitis are somewhat higher for non-Hispanic than for Hispanic women. Prevalence of asthma is about the same for both groups of women for both types of estimates, and prevalence estimates for emphysema are about twice as high for non-Hispanics as for Hispanics for both crude and age-adjusted estimates. The crude estimate for diabetes is somewhat lower for Hispanic than for non-Hispanic women, and the age-adjusted prevalence is somewhat higher.

Men. As with women, self-reported hypertension is the most prevalent chronic condition among Hispanic and non-Hispanic men for both the crude and age-adjusted estimates (*Table 5.7*). With the exception of liver diseases, the reported prevalence of each of the chronic conditions is always higher among non-Hispanic men than among Hispanic men for both crude and age-adjusted estimates. Adjusting for age differences in the population does not appreciably change the estimate or the direction of the difference between Hispanic and non-Hispanic men for hypertension, asthma, chronic bronchitis, and liver diseases.

The crude prevalence of IHD is about three times higher among non-Hispanics than among Hispanics but less than twice as high when adjusted for age. In comparison to a twofold

Table 5.6—Crude and age-adjusted prevalence for selected chronic conditions for Hispanic women and non-Hispanic women, by descending rank order for Hispanics, United States, 1986–1990

Condition	Crude Prevalence		Age-adjusted Prevalence	
	Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
	%	%	%	%
Hypertension	4.91	13.70	10.55	12.01
Asthma	4.44	4.37	4.57	4.39
Chronic bronchitis	4.37	6.08	4.54	6.00
Diabetes	2.30	2.93	3.53	2.57
Ischemic heart disease	0.87	2.13	3.53	1.78
Stroke	0.63	1.19	1.10	0.99
Emphysema	0.34	0.64	0.24	0.54
Liver diseases	0.22	0.22	0.34	0.21

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

higher crude prevalence, the age-adjusted prevalence of stroke is about the same among Hispanics and non-Hispanics. Crude prevalence of diabetes is about the same among Hispanic and non-Hispanic men but about 50 percent higher among Hispanic men when adjusted for age.

Comparison of Hispanic men and women. The crude prevalence is higher for women than for men for asthma, chronic bronchitis, and emphysema; about the same for diabetes and stroke; and lower for hypertension, IHD, and liver diseases. When adjusted for age, the prevalences of hypertension, asthma, chronic bronchitis, and IHD are higher for women than for men; about the same for diabetes and stroke; and lower for emphysema and liver diseases.

CANCER INCIDENCE AND SURVIVAL

The most recent SEER data on cancer incidence and survival among Hispanic Americans was published in *Health, United States, 1990*.²

Because the data are from the New Mexico registry only, the Hispanic group is classified as Mexican American. The comparison group, non-Hispanic whites, is also from the New Mexico cancer registry. Incidence rates per 100,000 persons were calculated for 1977–1983.

Lung cancer incidence rates were about half as high among the Mexican American population as the non-Hispanic white population for both men and women: Mexican American men (29.1), non-Hispanic white men (53.5), Mexican American women (11.9), and non-Hispanic white women (20.5). Colorectal cancer incidence rates were about three-fourths as high among Mexican Americans as among non-Hispanic whites for both sexes: Mexican American men (27.8), non-Hispanic white men (37.9), Mexican American women (22.3), and non-Hispanic white women (29.6). Breast cancer rates were much lower among Mexican

Table 5.7—Crude and age-adjusted prevalence for selected chronic conditions for Hispanic men and non-Hispanic men, by descending rank order for Hispanics, United States, 1986–1990

Condition	Crude Prevalence		Age-adjusted Prevalence	
	Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
	%	%	%	%
Hypertension	7.16	11.23	7.86	10.85
Asthma	3.53	4.22	3.48	4.33
Diabetes	2.27	2.57	3.74	2.56
Chronic bronchitis	2.01	4.29	2.08	4.38
Ischemic heart disease	1.09	3.36	1.97	3.41
Stroke	0.63	1.45	1.27	1.18
Liver diseases	0.40	0.28	0.40	0.26
Emphysema	0.21	1.18	0.52	1.22

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

American women than among non-Hispanic white women (50.8 versus 71.6). Prostate cancer rates were also lower among Mexican Americans than among non-Hispanic whites (70.7 versus 75.2).

The 5-year relative survival for lung cancer was slightly lower for Mexican-American men than for non-Hispanic white men (8.7% versus 11.0%) and about the same for Mexican-American and non-Hispanic white women (14.6% versus 14.7%). The same pattern was evident for survival for colorectal cancer. The 5-year relative survival for colorectal cancer was lower for Mexican-American men than for non-Hispanic white men (40.8% versus 46.2%) and about the same for Mexican-American and non-Hispanic white women (49.4% versus 50.0%). Breast cancer survival was somewhat lower for Mexican-American women than for non-Hispanic white women (70.6% versus 74.6%), and prostate cancer survival was slightly lower

for Mexican-American men than for non-Hispanic white men (72.4% versus 76.0%).

IMPLICATIONS FOR PUBLIC HEALTH

Both crude and age-adjusted estimates are important in assessing the burden of chronic disease among Hispanics and non-Hispanics because the crude estimates indicate the actual situation and the age-adjusted estimates allow comparisons without confounding by age differences in the population that is being compared.

In this book, estimates for diabetes among Hispanic Americans are somewhat lower than published regional estimates for Hispanic subgroups.³ From 1986 through 1990, the NHIS did not oversample in regions with high Hispanic populations.

Although cancer incidence for the selected sites is lower for Mexican-Americans than for non-Hispanic whites, survival time is less. The

shorter relative 5-year survival time may be due to delayed diagnosis, to less effective treatment, or to a combination of these factors. Earlier diagnosis among Hispanics through appropriate cancer screening programs and routine physical examinations may lead to earlier treatment and increased survival time. A recent study of knowledge and attitudes toward cancer among adults who identified themselves as Latino or Anglo found that misconceptions about cancer and a fatalistic attitude about cancer were more prevalent among Latinos than among Anglos.⁴ Further research on the barriers to screening for cancer among various Hispanic subgroups would enable public health practitioners to develop culturally appropriate and scientifically sound cancer control interventions.

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HEALTH-RELATED QUALITY OF LIFE

In this section, data from the National Health Interview Surveys (NHIS) which were conducted during 1986 through 1990, are used to describe respondent-assessed health status and limitation of major activities due to chronic conditions (Appendix E). The NHIS uses the phrase *respondent-assessed health status* rather than *self-reported health status* because the respondent may have reported for another person in the household. As a way of evaluating the collective impact of the eight self-reported chronic conditions examined in the previous section on respondent-assessed health status and on limitation of activity due to chronic conditions, the prevalence of these outcome measures was assessed for two chronic disease subgroups: respondents reporting one or more of the eight conditions (hypertension, asthma, diabetes, chronic bronchitis, IHD, stroke, emphysema, and liver disease) and respondents reporting hypertension. Hypertension was chosen because

it had the highest prevalence. The other specific conditions did not provide the sample size required to compare subgroups.

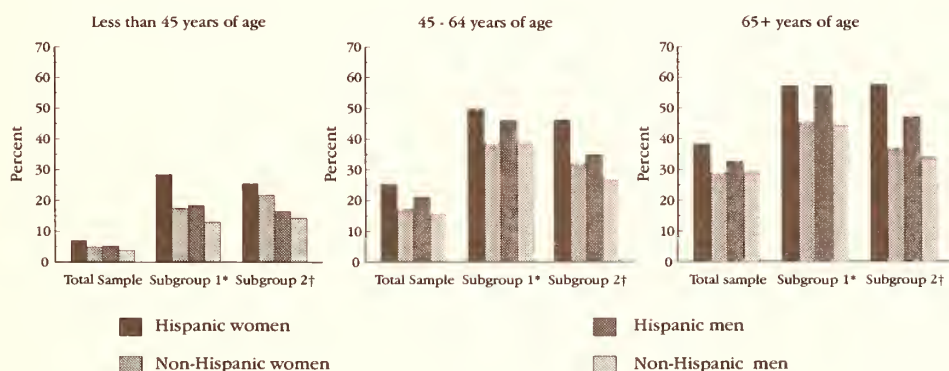
RESPONDENT-ASSESSED HEALTH STATUS

As with non-Hispanic women, the percentage of Hispanic women who reported fair or poor health increased with age; however, higher percentages of Hispanic women reported fair or poor health across age groups in the total sample and in the two chronic conditions subgroups (Figure 5.7). Among Hispanic women in the total sample, respondents in the 45–64 year age category were 3.5 times more likely, and respondents in the 65 years and over age category were 5.4 times more likely than respondents in the youngest age category to report fair or poor health. Comparisons of Hispanic and non-Hispanic women by type of sample show that

the ethnic differential decreases with age among those in the total sample and among those reporting one or more of the selected chronic conditions but increases with age among the subgroup of persons who reported hypertension.

The patterns were similar among men: the percentage of Hispanic and non-Hispanic respondents who reported fair or poor health increased with age and was higher among Hispanics than non-Hispanics. The ethnic differential decreased with age among persons in the total sample and among those who reported one or more of the selected chronic conditions but increased with age among the subgroup of persons who reported hypertension. Among the total sample of Hispanic men, respondents in the 45–64 year age category were four times more likely than respondents in the youngest age category to report fair or poor health. Respondents aged 65 years and older were 6.2

Figure 5.7—Age-specific self-reported prevalence of fair or poor health status among Hispanic adults and non-Hispanic adults, by type of sample, United States, 1986–1990



*Subgroup 1—persons who reported any one of the following conditions: hypertension, asthma, diabetes, chronic bronchitis, ischemic heart disease, stroke, emphysema, liver diseases.

†Subgroup 2—persons who reported being told that they had high blood pressure or hypertension.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

times more likely to report fair or poor health.

With the exception of the subgroup within the oldest age category who reported one or more of the selected chronic conditions, higher percentages of Hispanic women than men reported fair or poor health. The sex differential is largest among those in the youngest age category for respondents in both chronic disease subgroups: women are 55 percent more likely than men to report fair or poor health.

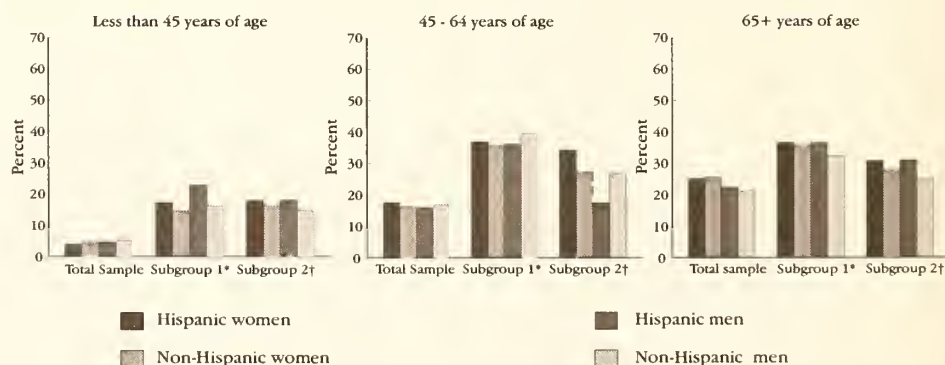
LIMITATION IN ACTIVITIES DUE TO CHRONIC CONDITIONS

Self-reported prevalence of limitation in activities due to chronic conditions is much lower than the self-reported prevalence of fair or poor health status among Hispanic and non-Hispanic respondents across the categories of sex, age, and type of sample. Among women in the total sample, the percentage who reported limitation in their activity due to chronic conditions

increased with age (*Figure 5.8*). However, the situation is different in the two chronic disease subgroups. Among the subgroup of women who reported one or more of the selected chronic conditions, no difference was found between the middle and oldest age categories in the percentage of women who reported limitation of activities. Among the subgroup of women who reported hypertension, a decline was noted in the percentage of Hispanic women who reported limitation of activity from the middle to the oldest age categories (34.2% versus 30.7%); virtually no change was observed among non-Hispanic women aged 45–64 years (27.2%) and those aged 65 years and older (27.8%).

In contrast to the health status indicator of self-reported fair or poor health, the percentage of women who reported limitation of activity due to chronic conditions is not always higher among Hispanic women than among non-

Figure 5.8—Age-specific self-reported prevalence of limitation in activity because of chronic conditions among Hispanic adults and non-Hispanic adults, by type of sample, United States, 1986–1990



*Subgroup 1—persons who reported any one of the following conditions: hypertension, asthma, diabetes, chronic bronchitis, ischemic heart disease, stroke, emphysema, liver diseases.

†Subgroup 2—persons who reported being told that they had high blood pressure or hypertension.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990.

Hispanic women across all subgroup comparisons. When the prevalence is higher, the difference is usually slight. An exception was noted among women aged 45–64 years in the hypertension subgroup—34.2 percent of Hispanic respondents report limitation of activity, whereas 27.2 percent of non-Hispanic respondents reported such limitation.

Among men in the total sample, self-reported prevalence of limitation of activity increases with age for both Hispanic and non-Hispanic respondents, but, as with women, the increase with age is not present among men 65 years old and older in the two chronic disease subgroups. The prevalence of limitation of activities is also not always higher among Hispanic men than among non-Hispanic men across all subgroup comparisons. In four of the nine subgroups, higher percentages of non-Hispanic men than Hispanic men reported limitation of activity.

Among Hispanics in the various subgroups, the sex difference in the prevalence of limitation of activities is usually slight except among respondents aged 45–64 years in the hypertension subgroup. Twice as many women as men in this group reported activity limitations.

IMPLICATIONS

These findings demonstrate the cumulative effect of the selected chronic conditions on health-related quality of life. The prevalence of fair or poor health status and of limitation of activity due to chronic conditions is always much higher in the two chronic disease subgroups than in the total sample. The two health status indicators are measuring different aspects of health-related quality of life. The percentage of persons who reported fair or poor health status was much higher across all subgroups than was the percentage of persons who reported limitation of activity due to chronic

conditions. This finding was true even in the subgroup of persons who reported that they had had one or more of the selected chronic conditions.

Although results have been stratified by age, sex, and Hispanic ethnicity, the findings in this book do not take into account differences in level of education and income. In a recent report, NHIS data were used to examine the effect of education on health status. The report indicated that the estimate of the percentage of people who were assessed in fair or poor health was about 5.5 times higher for persons with less than 12 years of education (23.3%) than for those with more than 12 years of education (4.2%).¹

Multivariate analyses are needed to examine the role of age, sex, ethnicity, and socioeconomic factors to understand these complex relationships. In-depth analyses are also needed to examine the relation between specific chronic diseases and health-related quality of life measures and to assess the relation between these measures and comorbidity.

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RISK FACTORS AND PREVENTIVE HEALTH PRACTICES

In this section, prevalence estimates are presented for selected risk factors and preventive health practices among Hispanic and non-Hispanic adults who participated in the Behavioral Risk

Factor Surveillance System (BRFSS) from 1991 through 1992. The sample is drawn from the population of adults aged 18 years and older with telephones in each of the states that conducted the BRFSS during the 2-year period (Appendix F). *Healthy People 2000* targets are presented, if available, to add a numerical frame of reference.

The prevalence estimates represent an overall comparison of selected risk factors and preventive health practices among Hispanics and non-Hispanics without adjusting for age, education, or income. The estimates do not imply a causal association between Hispanic ethnicity and the risk factors or preventive health practices. Rather, they represent the current situation and thus target specific population groups for needed public health interventions. The tables present estimates by ethnicity and by sex; estimates for cigarette smoking, sedentary lifestyle, and overweight are stratified by the age, education, and income categories shown in *Table 5.8*. These estimates are given in the text.

Hispanic Americans: the BRFSS compared to the 1990 U.S. census. Hispanic Americans can be of any race (Appendix A). In the BRFSS, respondents were asked to choose their racial group based on the following choices: white, black, Asian or Pacific Islander, American Indian or Alaska Native, and other. Each respondent was also asked "Are you of Hispanic origin such as Mexican American, Latin American, Puerto Rican, or Cuban?" The weighted estimate for the percentage of respondents who reported Hispanic ethnicity (6.5%) was lower than the percentage of Hispanics enumerated in the 1990 U.S. census (9.0%).

Most Hispanic Americans identify themselves as white. In the BRFSS sample for 1991 through 1992, 94.3 percent of Hispanics identified their race as white, whereas 86.7

percent of non-Hispanics reported their race as white. The BRFSS estimates are somewhat higher than the 1990 census in which 91.3 percent of Hispanics and 83.2 percent of non-Hispanics identified themselves as white.

Demographic characteristics. A higher percentage of Hispanic adults than non-Hispanic adults were less than 45 years old, had less than 12 years of education, and had annual household incomes of less than \$10,000 (*Table 5.8*). The age and level of education among Hispanic men and women were similar, but women were more likely than men to report annual household incomes of less than \$10,000. The mean age among Hispanics was older for women (39.2 years) than for men (37.3 years). Comparisons of age by sex and ethnicity show that Hispanic respondents are younger than non-Hispanic respondents for both sexes: women: 39.2 years versus 45.3 years; men: 37.3 years versus 43.0 years.

RISK FACTORS

Cigarette smoking. Self-reported prevalence of cigarette smoking is lower among Hispanic than non-Hispanic adults, particularly among women (*Table 5.9*). Among cigarette smokers, Hispanic women smoke fewer cigarettes per day than do non-Hispanic women (13.8 versus 18.6). The same pattern exists among Hispanic and non-Hispanic men (18.3 versus 21.8). Stratification by categories of age, income, and level of education shows ethnic differences across subgroups in the percentage of persons who reported that they smoked cigarettes. Among Hispanic women, the prevalence of smoking was about the same among those with less than 12 years of education (13.6%) as among those with more than 12 years of education (13.3%). The prevalence was also about the same among those who lived in households with annual incomes less than \$10,000 (15.5%) as

Table 5.8—Sample size and weighted estimates for demographic variables for Hispanic adults and non-Hispanic adults aged 18 years and older, United States,* 1991–1992

	Women				Men			
	Hispanic		Non-Hispanic		Hispanic		Non-Hispanic	
	sample size	weighted estimate %	sample size	weighted estimate %	sample size	weighted estimate %	sample size	weighted estimate %
Number	4,063		99,957		2,929		73,070	
Age (years)								
18–44	2,609	67.7	52,360	54.7	2,036	73.0	42,107	57.6
45–64	945	22.4	25,441	25.2	591	19.1	19,460	26.6
65+	509	9.9	22,156	20.1	302	7.9	11,503	15.7
Education (years)								
< 12	1,128	33.7	15,830	14.4	758	33.9	10,425	13.8
12	1,353	31.1	35,119	36.3	894	28.8	23,421	32.5
> 12	1,572	34.9	48,818	49.1	1,271	37.1	39,129	53.6
Refused	10	0.4	190	0.2	6	0.3	95	0.1
Annual Household Income								
<\$10,000	976	24.3	16,512	13.9	404	14.9	6,641	8.5
\$10,000–\$20,000	990	25.6	20,255	18.8	725	26.5	13,111	16.6
>\$20,000	1,597	37.3	49,954	53.8	1,507	47.9	46,115	64.6
Unknown/refused	500	12.8	13,236	13.5	293	10.8	7,203	10.4

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

among those who lived in households with annual incomes over \$20,000 (15.9%). In contrast, the prevalence of smoking among non-Hispanic women varies by socioeconomic indicators: 26.0 percent for those with less than 12 years of education and 17.1 percent for those with more than 12 years of education; 24.8 percent for those living in households with

annual incomes of less than \$10,000 and 20.5 percent for those living in households with annual incomes of more than \$20,000. Hispanic men with less than 12 years of education (25.4%) are more likely to report current smoking than those with more than 12 years of education (17.4%). However, it is not as striking a difference as it is for non-Hispanic men

Table 5.9—Year 2000 targets and the prevalences of selected self-reported risk factors among Hispanic adults and non-Hispanic adults aged 18 years and older, United States,* 1991–1992

Risk Factor	Year 2000 Target [†]	Women		Men	
		Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
		% (SE) [‡]	% (SE) [‡]	% (SE) [‡]	% (SE) [‡]
Cigarette smoking [§]	≤ 15%	14.5 (0.77)	21.6 (0.19)	22.0 (1.12)	24.9 (0.24)
Sedentary lifestyle	— ^{§§}	61.9 (1.15)	57.6 (0.24)	61.5 (1.38)	56.5 (0.27)
Alcohol use					
chronic drinking [¶]	— ^{§§}	0.8 (0.19)	1.0 (0.05)	5.9 (0.63)	6.4 (0.14)
binge drinking ^{**}	— ^{§§}	7.0 (0.61)	7.1 (0.13)	27.1 (1.31)	21.9 (0.23)
Overweight ^{††}	≤ 20%	26.5 (1.05)	23.1 (0.20)	23.8 (1.17)	25.0 (0.24)
High cholesterol ^{‡‡}	— ^{§§}	23.5 (1.23)	27.1 (0.24)	25.5 (1.54)	25.5 (0.30)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]*Healthy People 2000*: specific targets given in objective 3.4 (cigarette smoking) and 2.3 (overweight).

[‡]Standard error.

[§]Cigarette smoking—ever smoked 100 cigarettes and currently smoke regularly.

^{||}Sedentary lifestyle—fewer than three 20-minute sessions of leisure-time physical activity per week.

[¶]Chronic drinking—60 or more drinks of alcohol during the past month.

^{**}Binge drinking—consumption of five or more alcoholic beverages on at least one occasion during the past month.

^{††}Overweight—body mass index ≥ 27.8 for men and ≥ 27.3 for women (body mass index = weight in kilograms divided by height in meters squared [BMI=kg/(m)²]).

^{‡‡}High cholesterol awareness—respondents ever told by a health professional that their cholesterol is elevated.

^{§§}Year 2000 targets do not match standard BRFSS variables.

Sources: CDC, Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

(35.1% versus 18.5%). The inverse association between income and smoking prevalence found among non-Hispanic men (31.7% for those living in households with annual incomes of less than \$10,000 versus 23.3% among those living in households with annual incomes of more than \$20,000) is not reported by Hispanic men (23.2% for those with annual incomes less than \$10,000 versus 21.1% for those with annual incomes of more than \$20,000).

Sedentary lifestyle. The BRFSS defines a sedentary lifestyle as fewer than three 20-minute sessions of leisure-time physical activity per week. Job-related exercise is excluded from this definition. Hispanic men and women were somewhat more likely than their non-Hispanic counterparts to report a sedentary lifestyle during the month preceding the interview (Table 5.8). However, the prevalence of sedentary lifestyle is high—more than 55

percent—for both Hispanic and non-Hispanic adults. The subgroups of respondents with less than 12 years of education and those with annual household incomes of less than \$10,000 had the highest percentages reporting a sedentary lifestyle among Hispanic and non-Hispanic men and women.

Alcohol use. Self-reported prevalence of chronic drinking and of binge drinking are similar among Hispanic and non-Hispanic women. Among men, reported binge drinking is higher among Hispanics than non-Hispanics. Among Hispanics, chronic drinking is about seven times higher among men than among women, and binge drinking is about four times higher.

Overweight. Self-reported data on height and weight were used to calculate body mass index (BMI) (BMI = weight in kilograms divided by height in meters squared) estimates for the participants. Men whose BMI was greater than or equal to 27.8 and women whose BMI was greater than or equal to 27.3 were classified as overweight. Hispanic and non-Hispanic men and women are above the year 2000 target of less than or equal to 20 percent of the population being classified as overweight. Hispanic women and non-Hispanic men have the highest prevalence of overweight. Hispanic women with less than 12 years of education (34.7%) are more likely to be overweight than are those with more than 12 years of education (19.5%). Hispanic women who live in households with annual incomes of less than \$10,000 are also more likely to be overweight than are women who live in households with annual household incomes of more than \$20,000. The inverse association of prevalence of overweight with the socioeconomic indicators found among Hispanic women is not as strong among Hispanic men for education (25.6% for less than 12 years versus 20.3% for more than 12 years) and is not

found for annual household income (23.7% for less than \$10,000 versus 24.8% for more than \$20,000.)

About 45 percent of Hispanic women and 41 percent of non-Hispanic women reported that they were trying to lose weight, and 27.1 percent of Hispanic men and 26.7 percent of non-Hispanic men reported that they were trying to lose weight. Among women who reported that they were trying to lose weight, about 81 percent reported eating fewer calories to lose weight, and about 55 percent reported increasing their physical activity. Hispanic men were somewhat less likely than non-Hispanic men to eat fewer calories to lose weight (73.9% versus 78.5%) and somewhat more likely to report increasing their physical activity (57.3% versus 51.8%).

High Cholesterol. Hispanic women were slightly less likely than non-Hispanic women to report being told by a health professional that their cholesterol was high, whereas there was no difference in the prevalence among Hispanic and non-Hispanic men.

PREVENTIVE HEALTH PRACTICES

More than 60 percent of Hispanics who smoke reported quitting for at least 1 day during the year preceding the interview, and about 50 percent of non-Hispanic smokers reported quitting for at least 1 day (Table 5.10). Hispanic men were the least likely of the ethnic and sex groups to report having had their blood pressure checked within the preceding two years. A much lower percentage of Hispanic women than non-Hispanic women reported having had their cholesterol checked within the past 5 years. Among men, the percentage who reported having had their cholesterol checked was much lower among Hispanics.

Breast and cervical cancer screening. Both Hispanic and non-Hispanic women fall well

Table 5.10—Year 2000 targets and the prevalences of self-reported preventive health practices recommended in Healthy People 2000 among Hispanic adults and non-Hispanic adults, United States, 1991–1992

	Year 2000 Target [†]	Women		Men	
		Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
Indicator		% (SE) [‡]	% (SE) [‡]	% (SE) [‡]	% (SE) [‡]
Current cigarette smokers: quit at least one day in past year	≥ 50%	62.4 (2.75)	50.9 (0.51)	64.0 (2.65)	51.8 (0.53)
Blood pressure checked within past 2 years	— [§]	94.4 (0.58)	96.6 (0.09)	87.7 (0.96)	93.1 (0.14)
Cholesterol checked within past 5 years	≥ 75%	58.1 (1.22)	69.1 (0.22)	49.3 (1.39)	63.5 (0.27)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia (1992).

[†]*Healthy People 2000*: specific targets given in objective 3.6 (quit cigarette smoking at least one day) and objective 15.14 (have cholesterol checked).

[‡]SE—Standard error.

[§]The objective for measuring blood pressure (objective 15.13) has two parts: having blood pressure measured within the preceding two years and being able to state whether their blood pressure is normal or high. The BRFSS survey cannot answer the second part of the objective. The target goal for the objective is 90%.

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

below the percentages given in the year 2000 targets for breast and cervical cancer screening for three of the four target percentages (Table 5.11). The specific target that was nearly met—women 50 years old and older having had a clinical breast examination and a mammogram within the past two years—was set 20 to 35 percentage points lower than the targets for the other three objectives: ever having had a Pap smear, having had a Pap smear within the preceding two years, and, among women 40 years old and older, ever having had a clinical breast examination and a mammogram. Almost 40 percent of Hispanic and non-Hispanic

women aged 18 years and older reported not having had a Pap smear within the past two years, and almost 20 percent of women aged 50 years and older reported not having had a clinical breast examination and a mammogram within the past two years.

ACCESS TO HEALTH CARE

The lack of a health care plan is the most striking difference between Hispanics and non-Hispanics among the various indicators of access to health care (Table 5.12). Hispanic adults are about 2.5 times more likely than non-Hispanic adults to report not having a health care plan.

Table 5.11—Year 2000 targets and self-reported prevalence of breast and cervical cancer screening among Hispanic women and non-Hispanic women, United States,* 1991–1992

Screening Practice	Year 2000 Target [†]	Hispanics		Non-Hispanics	
		%	(SE) [‡]	%	(SE) [‡]
Women aged 18 years and older: ever had a Pap smear [§]	≥ 95%	72.0	(1.07)	72.5	(0.22)
had within the preceding 2 years [§]		63.4	(1.04)	62.6	(0.23)
Women aged 40 years and older: ever had a clinical breast examination and mammogram	≥ 80%	63.8	(1.77)	70.4	(0.29)
Women aged 50 and older: Had a clinical breast examination and mammogram within the preceding 2 years	≥ 60%	55.0	(2.25)	57.5	(0.37)

*State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia

[†]Screening practices recommended in *Healthy People 2000*: specific targets given in objective 16.12 (Pap smear) and objective 16.11 (clinical breast examination and mammogram).

[‡]Standard error.

[§]For women with an intact uterine cervix.

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992; *Healthy People 2000*, 1991.

Also, they are about twice as likely as non-Hispanics to report having been unable to see a doctor when they needed to because of cost. The high percentage of Hispanics in the BRFSS population without a health care plan is consistent with a 1986 national survey on access to care. The survey found that 9.3 percent of white respondents and 12.4 percent of African-American respondents were without some type of health insurance, but 26.1 percent of Hispanic respondents had no health insurance.¹ The researchers speculated that the Hispanic group includes many undocumented workers who do not receive public assistance or workers who are employed as farm laborers or in service occupations who lack the negotiating power to receive health insurance as a fringe benefit.

IMPLICATIONS

Although overweight and lack of physical activity are national public health problems and are not unique to the Hispanic population, culturally based and culturally sensitive community interventions for weight loss and for increasing physical activity are needed in regions with high concentrations of Hispanic Americans. Because the subgroups of Hispanics with less than 12 years of education and those with annual household incomes of less than \$10,000 reported the highest prevalence of overweight and sedentary lifestyle, public health professionals should design interventions that include Hispanic Americans who have less than 12 years of education and who have low annual household incomes. Although researchers have

Table 5.12—Prevalences of self-reported routine checkup and access to care among Hispanic adults and non-Hispanic adults aged 18 years and older, United States, 1991–1992*

Indicator	Women				Men			
	Hispanic		Non-Hispanic		Hispanic		Non-Hispanic	
	%	(SE) [†]	%	(SE) [†]	%	(SE) [†]	%	(SE) [†]
Routine checkup within the past year [‡]	77.3	(0.99)	78.1	(0.20)	63.5	(1.34)	62.9	(0.27)
More than one year/less than 2 years	10.2	(0.73)	10.0	(0.14)	13.4	(0.97)	14.1	(0.19)
More than 5 years ago	4.8	(0.51)	4.9	(0.10)	9.4	(0.79)	10.6	(0.17)
Never had routine checkup	2.8	(0.37)	1.7	(0.06)	5.9	(0.72)	2.7	(0.09)
Unable to see a doctor during preceding year because of the cost [§]	24.9	(1.05)	14.0	(0.17)	17.0	(1.09)	9.3	(0.16)
Lack of health care plan	32.6	(1.19)	12.2	(0.16)	35.5	(1.42)	14.6	(0.20)
Health plan does not cover checkups or other preventive services [¶]	13.3	(0.99)	19.6	(0.19)	12.0	(1.15)	19.4	(0.23)

* State-aggregate data: 47 states and the District of Columbia (1991); 48 states and the District of Columbia.

[†]Standard error.

[‡]About how long has it been since you last visited a doctor for a routine checkup?

[§]Was there a time during the last 12 months when you needed to see a doctor, but could not because of the cost?

^{||}Do you have any kind of health care plan? (Health care plan was described as health insurance, prepaid plans such as health maintenance organization (HMO), or government plans, such as Medicare.)

[¶]When you are not sick, does your health care plan cover all, most, some, or none of your checkups or other preventive services?

Source: CDC, Behavioral Risk Factor Surveillance System, 1991–1992.

questioned whether the established cutoff points for classifying people as overweight are appropriate for the Hispanic population because the points are based on data from the non-Hispanic white population,^{2,3} the public health message related to weight is clear—increase physical activity and decrease excess weight.

The prevalence of cigarette smoking is lower among Hispanic men and women than among non-Hispanic men and women, but extensive marketing of tobacco in regions with high concentrations of Hispanic Americans could result in an increase in smoking among young Hispanics.⁴

The lower prevalence among Hispanic than non-Hispanic men and women of having a cholesterol measurement within the past five years indicates that comparisons of the prevalence of self-reported high cholesterol (*Table 5.9*) are based on a smaller portion of the Hispanic population than of the non-Hispanic population.

Because the BRFSS is a telephone interview, the results reported in this section may not be generalized to Hispanic Americans who do not have a telephone. NHIS data for 1986 through 1990 indicate that Hispanics are less likely than non-Hispanics to have a telephone in their homes (86.3% versus 93.3%). In the Northeast region of the United States only 82.3 percent of Hispanics have a telephone in their home. A recent census report estimated that 88 percent of Hispanics and 96 percent of whites have a telephone in their home.⁵ Thus, Hispanics are somewhat less likely to be reached through the BRFSS than are non-Hispanics.

Because the BRFSS may not be representing some of the poorest Hispanics, such as those persons without telephones, the estimates of 32.6 percent of Hispanic women and 35.5 percent of Hispanic men having no health care plan are most likely underestimates of the actual health coverage among Hispanic Americans.

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SUMMARY

The Hispanic population is a young, diverse, rapidly growing minority group with large subgroups of Mexican Americans, Puerto Ricans, and Cuban Americans. Demographers estimate that by the year 2010, the Hispanic population will surpass African-Americans as the largest minority group in the United States. Most of the Mexican American population lives in five southwestern states: Arizona, California, Colorado, New Mexico, and Texas. Puerto Ricans are concentrated in the northeastern states, particularly in New York and New Jersey. A high proportion of Cubans live in the Miami area of Florida. Hispanics are more likely than non-Hispanics to live in urban areas. Although nationwide, the majority of Hispanics were born in the United States, high concentrations of foreign-born Hispanics reside in Florida, Texas, New Mexico, and California.

Although great socioeconomic diversity exists within and across the Hispanic subgroups, Hispanics as a whole have lower education and income levels than do non-Hispanics. National surveys have shown that about a third of Hispanics lack health insurance. Many of the uninsured are employed but cannot afford the premiums. Lower socioeconomic status, recency of immigration, linguistic barriers, high medical costs, and inadequate health care coverage serve as powerful barriers to receiving medical care.

National estimates of life expectancy are not available for Hispanics but the estimate of life expectancy at birth for Hispanics in Texas is similar to that for non-Hispanic whites and higher than that for non-Hispanic African-Americans. The age-adjusted mortality rates for cirrhosis and diabetes are higher for Hispanics than for non-Hispanics for both men and women. As with non-Hispanics, hypertension, asthma, and chronic bronchitis are predominant chronic conditions among Hispanic men and women. Diabetes is more prevalent among Hispanics than among non-Hispanics when the estimate is adjusted for age. Although the incidence of lung, colorectal, breast, and prostate cancers was lower for Mexican Americans than for non-Hispanic whites in the New Mexico SEER registry, 5-year relative survival was slightly worse, except for lung and colorectal cancers for women. As a whole, higher percentages of Hispanics than of non-Hispanics report fair or poor health status.

Prevalence of cigarette smoking is lower among Hispanics than among non-Hispanics. Among persons who reported smoking, the number of cigarettes smoked per day is also lower among Hispanics. Binge drinking is higher among Hispanic than among non-Hispanic men. The two main health behaviors that need to be addressed are problems in the society at large: lack of exercise and overweight.

SURVEILLANCE

Implications. According to the current census system for categorizing race, Hispanics can be of any race. This fact leads to an overlap in demographic and health-related statistics involving Hispanics because the U.S. population is classified by two different systems: by the four racial categories and by Hispanic ethnicity. Statistics are often presented for whites, African-Americans, and Hispanics, but studies do not always indicate whether the groups were mutually exclusive categories in the data analyses. Other reports divide the population into Hispanics and non-Hispanics and then subdivide each group into the four racial groups. The latter approach is unambiguous, but it is not a useful method for national surveillance because more than 90 percent of both Hispanic and non-Hispanic groups are white and because some surveillance systems have not collected Hispanic ethnicity.

The high proportion of Hispanics identifying themselves as *other race* rather than as one of the four racial groups may be seen as illustrating the confusion in the population about how race and ethnicity are defined. It may also indicate a valid viewpoint—they are neither white nor African-American. According to a recent study on context effects for census measures of race and Hispanic origin, U.S.-born Hispanics and immigrant Hispanics differ in their understanding of the U.S. racial categories.¹ More acculturated Hispanics understand the categories of white and African-Americans, but immigrants may not see themselves as white or African-American.

The confusion in the population concerning classification of race and ethnicity stems from a constantly changing system. Since race was first collected as a separate census item in 1850, no system of racial categories has been used in more than two censuses.¹ In 1930, U.S. residents who

were born in Mexico were classified as a separate racial category. The Hispanic origin item was first included in the 1970 census on the long form (one in six households); starting in 1980, it was asked of everyone. The state of flux in the racial classification system reflects the changing nature of the population and the arbitrary nature of racial classifications. Some researchers favor keeping the present system to preserve continuity in our surveillance system. However, the dissatisfaction about the ambiguity surrounding the overlap in race and Hispanic ethnicity has led to the suggestion that Hispanic origin be changed from an ethnic category to a racial category.² This suggestion is being considered by the Office of Budget and Management³ and was one of the recommendations of the workshop sponsored by CDC/ATSDR on the use of race and ethnicity in public health surveillance (see Appendix A for the recommendations).

Recommendations. The reporting of Hispanic ethnicity and of race should be standardized in vital statistics data. Information on ethnic subgroups and recency of immigration should be included in demographic and epidemiologic surveys. Surveillance systems need to be developed to reach adults who cannot be reached by telephone. National estimates of life expectancy at birth and at later ages need to be derived for Hispanic Americans.

The typical descriptive analyses provide a useful picture of the actual health profile among the group as a whole. Regional and subgroup descriptive analyses can target the health problems in a specific geographic area or among an ethnic or demographic subgroup. The general descriptive analyses need to be followed by multivariate analyses that examine the role of education, income, recency of immigration, and health insurance on specific risk factors.

HEALTH PROMOTION AND DISEASE PREVENTION

Implications. In general, the young age of the Hispanic population offers great potential for chronic disease prevention and health promotion through school and community interventions that target children and adolescents. The challenges facing public health practitioners in state and county health departments vary widely across the United States because of the diversity within the Hispanic population in terms of recency of immigration, language, socioeconomic indicators, geographic location, and cultural influences. Because the Hispanic population is so diverse, the sociodemographic and cultural characteristics and the specific health promotion needs of the local group for whom the intervention is being designed must be identified before tailored intervention strategies are outlined.

The high percentage of Hispanic Americans without health insurance is the largest barrier to receiving medical care. However, even if universal access to health care is realized, other barriers to medical care must still be taken into account.⁴

Recommendations. Health behavior interventions must be culturally based and culturally sensitive to be effective. However, generic interventions for Hispanic Americans are not adequate because of the wide diversity within the Hispanic population. Health promotion literature designed for Hispanic populations must be tailored for the target group in terms of degree of assimilation into the U.S. culture, reading ability, and language. Low literacy components and Spanish versions will be necessary with some groups. The recruitment and retention of Hispanic health professionals should be promoted.

Strategies to reduce sedentary lifestyle, excess weight, and binge drinking should be grounded

in the awareness that these are society-wide problems and are not unique to the Hispanic population. Efforts are needed to prevent the adoption of cigarette smoking among adolescents and to maintain the low prevalence of cigarette smoking among Hispanic women. Evaluation of interventions aimed at reducing chronic disease risk factors must be an ongoing part of the disease prevention agenda.

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6 SUMMARY

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The emphasis in the four minority-specific chapters was on providing information on the diversity within the population and on within-group comparisons by sex and by age groups rather than on making comparisons across the four racial and ethnic minority populations. In the minority-specific chapters, information on demographic characteristics, life expectancy, mortality, morbidity, health status, risk factors, and the use of preventive health services was presented for the specific minority population by sex with the white population used as the reference group. Each minority-specific chapter closed with a summary of the findings, public health implications that could be drawn from the findings, and specific recommendations for public health practitioners. This chapter summarizes similarities and differences across the four minority populations and provides general recommendations for data needs and for intervention needs in the area of chronic disease prevention and health promotion.

SIMILARITIES AND DIFFERENCES

Demographically, the minority groups considered in this document have much in common. All are younger than the white population. Approximately one in four members of the minority groups are less than 15 years of age, whereas less than one in five white Americans are in this age group (*Table 6.1*). The minority populations are projected to grow at faster rates

than the white population during the next five decades.¹ The rate of natural increase—crude birth rate *minus* crude death rate—is much higher among the racial and ethnic minority populations than among the white population (see *Table A.1* in Appendix A). With the exception of the Asian and Pacific Islander population, lower percentages of the minority groups have 12 or more years of formal education than do white Americans, and higher percentages live below the poverty level. Nearly 1 in 3 members of the African-American and the American Indian and Alaska Native populations lived below the poverty level in 1990, whereas 1 in 10 white Americans lived below the poverty level.

In terms of measures of disease and risk behavior, however, minority groups in this country are not so homogeneous or uniformly disadvantaged. In 1990, African-Americans had age-adjusted mortality rates well above the rates of white Americans, whereas Hispanic Americans had rates that were comparable to those among white Americans (*Table 6.2*). Asians and Pacific Islanders and American Indians and Alaska Natives, on the other hand, had mortality rates markedly lower than those among white Americans. The risk of dying from the selected chronic diseases for a person in the white population was 1.5 times the risk for an American Indian or Alaska Native and 1.7 times the risk for an Asian or Pacific Islander.

Table 6.1—Percentage of the population with selected demographic characteristics for white and minority populations, United States, 1990

Indicator	White American %	African-American %	American Indian/ Alaska Native %	Asian/ Pacific Islander %	Hispanic American* %
Less than 15 years old	17.3	27.2	30.4	24.3	29.7
12 or more years of education†	77.9	63.1	65.5	77.5	49.8
Living in poverty‡	10.7	31.9	31.7	12.2	28.1

* Persons of Hispanic origin may be of any race.

† Among people aged 25 years old or older.

‡ Poverty as used in the source materials from the U.S. Bureau of the Census consists of a set of money income thresholds that vary by family size and composition. Families or individuals with income below their appropriate thresholds are classified as below the poverty level. For more information on poverty, see *Poverty in the United States: 1991*; Current Population Reports, Series P-60, No. 181, August 1992.

Sources: U.S. Bureau of the Census. *We, the American Blacks; We, the First Americans; We, the American Asians; We, the American Pacific Islanders; We, the American Hispanics*. Washington, DC: U.S. Government Printing Office, 1993.

For the self-reported chronic conditions examined in this book, ischemic heart disease (IHD) is less common among the four minority groups than among white Americans, whereas diabetes is less common among white Americans than among the minority groups (*Table 6.3*). For the other six chronic conditions, the minority groups had both higher and lower prevalences than those for the white population. Asians and Pacific Islanders had lower prevalences than those for white Americans for four of the five conditions shown.

The mixed picture for minority populations is also evident for behavioral risk factors related to chronic diseases (*Table 6.4*). Members of the minority groups are more likely than white Americans to report a sedentary lifestyle and being overweight. However, except for American

Indians and Alaska Natives, members of minority groups are less likely to report current cigarette smoking or chronic drinking than are white Americans. African-Americans and Asians and Pacific Islanders are less likely to report binge drinking than are white Americans. Overall, in terms of chronic disease, the self-reported prevalence of behavioral risk factors is highest for the American Indian and Alaska Native population and lowest for the Asian and Pacific Islander population.

PROBLEMS COMMON TO THE STUDY OF ALL MINORITY GROUPS

Although minority groups differ in significant ways in terms of their health, there are problems common to the study of all the groups,² particularly the definition of group membership. As discussed in the Introduction and in Appendix A,

Table 6.2—Age-adjusted mortality rates* for major chronic diseases for white and minority groups, by underlying cause of death, United States, 1990

Indicator	White American	African-American	American Indian/Alaska Native	Asian/Pacific Islander	Hispanic American [†]
Ischemic heart disease	177.4	180.7	104.0	93.7	181.2
Stroke	48.5	76.0	33.3	45.8	47.4
Chronic obstructive pulmonary disease	32.6	24.8	21.5	15.8	22.6
Diabetes	15.9	35.7	30.3	12.4	28.3
Cirrhosis	9.4	14.5	21.2	4.7	19.0
Lung cancer	54.0	67.5	27.9	26.8	35.6
Colorectal cancer	20.6	26.6	10.1	12.6	18.2
Breast cancer	16.3	19.5	6.6	6.5	13.9
Cervical cancer	1.1	1.8	0.7	0.5	0.9
Prostate cancer	10.7	23.5	5.8	6.0	10.2
Total	386.5	470.6	261.4	224.8	377.3

* Age-adjusted to the 1980 U.S. standard population; rate per 100,000 persons.

[†] Persons of Hispanic origin may be of any race.

Source: CDC, NCHS, National Vital Statistics Systems, 1990. ICD-9 codes are given in Appendix C.

the Office of Management and Budget (OMB) Statistical Policy Directive 15 lists four racial categories and one ethnic group (Hispanic Americans) but fails to define them unambiguously. Many Hispanic Americans view Hispanic ethnicity as a race and, when participating in a survey that collects data on race, select *other race* rather than selecting one of the four racial groups. Individuals of mixed race may claim different racial membership at different times or may select *other race* rather than choosing one race. These classification problems will increase with time as the minority populations grow and interracial marriages become more common.

A related problem is the oversimplification that comes from combining heterogeneous groups into a single racial or ethnic category. A good example is the Asian and Pacific Islander population. Recent refugees from Southeast Asia, for example, have very different health profiles than do Japanese-American populations. Similar differences exist among the major groups that comprise the Hispanic population. Although the diversity among the ethnic subgroups within the minority groups is masked by the summary statistics for the total group, obtaining national mortality, morbidity, and risk factor data for the less populous minority

Table 6.3—Age-adjusted prevalences of selected chronic conditions for white and minority populations, United States, 1986–1990

Indicator	White American %	African- American %	American Indian/ Alaska Native %	Asian/ Pacific Islander %	Hispanic American* %
Hypertension	10.8	17.2	12.7	9.0	9.3
Bronchitis	5.4	3.5	6.2	1.9	3.4
Asthma	4.3	4.8	5.3	2.8	4.1
Diabetes	2.4	4.6	4.0	2.8	3.6
Ischemic heart disease	2.6	1.5	2.2	1.3	1.8
Stroke	1.0	1.3	—†	—†	1.2
Emphysema	0.8	0.5	—†	—†	0.4
Chronic liver disease	0.2	0.2	—†	—†	0.4

* Persons of Hispanic origin may be of any race.

† Prevalence not shown because the standard error was 30 percent or more of the prevalence estimate.

Source: CDC, NCHS, National Health Interview Survey, 1986–1990. ICD-9 codes are given in Appendix D.

groups is already limited by small sample sizes. Attempting to provide national data on subgroups of small minority groups by further dividing a small sample would result in unstable national estimates for these subgroups.

Poor data quality is a major problem common to all minority groups. This is a particular concern with data derived from sample surveys. The validity, reliability, and accuracy of survey data from minority groups are subject to sampling and nonsampling errors related to small sample sizes, language barriers, illiteracy or low literacy, poverty, and low telephone coverage rates.

Finally, minority populations are rapidly adapting to the dominant culture. Much of the current health profile for each minority popula-

tion results from behavioral norms that are changing under the pressures to assimilate. It is thus difficult to project what their future health will be based on health outcomes in the past.

RECOMMENDATIONS

DATA NEEDS

Racial and ethnic categories need to be better defined so that their meaning is clear and information is comparable from source to source. A consistent classification scheme is needed for people of mixed racial background. At the same time, attempts should be made to increase the number of sources of health data that record household income and education.

Table 6.4—Weighted prevalences of behavioral risk factors for white and minority groups, United States, 1991–1992

Indicator	White American %	African-American %	American Indian/ Alaska Native %	Asian/ Pacific Islander %	Hispanic American* %
Cigarette smoking [†]	23.0	23.0	34.3	14.8	18.1
Sedentary lifestyle [‡]	56.3	65.5	57.4	60.5	61.7
Alcohol use:					
Chronic drinking [§]	3.8	2.3	4.4	1.4	3.2
Binge drinking [¶]	15.0	9.4	17.2	8.4	16.6
Overweight ^{**}	23.2	33.6	32.0	10.4	25.2
High cholesterol ^{††}	26.5	23.9	27.5	26.6	24.4

* Persons of Hispanic origin may be of any race.

[†] Cigarette smoking—ever smoked 100 cigarettes and currently smoke regularly.

[‡] Sedentary lifestyle—fewer than three 20-minute sessions of leisure-time physical activity per week.

[§] Chronic drinking—60 or more drinks of alcohol during the past month.

[¶] Binge drinking—consumption of five or more alcoholic beverages on at least one occasion during the past month.

^{**} Overweight—body mass index ≥ 27.8 for men and ≥ 27.3 for women (Body mass index = weight in kilograms divided by height in meters squared [(BMI=kg/(m)²]).

^{††} High cholesterol awareness—respondents ever told by a health professional that their cholesterol is elevated.

Source: CDC, Behavioral Risk Factor Surveillance System, state-aggregate data for 1991–1992.

This information will provide alternatives to race for the identification of high-risk groups. Members of a particular income group may, in fact, be more homogeneous with respect to their chronic disease profile than are members of a particular minority.

Other improvements in existing surveillance systems are necessary to better reflect the health status of hard-to-reach members of minority populations, whether in the inner cities or in remote rural areas. The problem of poor telephone coverage for national telephone surveys needs to be addressed. More work is needed on the development of data collection instruments that are linguistically and culturally appropriate.

Trends in all the outcomes covered in this book for the four minority groups should be

followed. Minority-specific results from the Youth Risk Behavior Survey³ are also important. Trend data and information on teenagers will provide advance notice of emerging problems among persons in these populations and are appropriate given the behavioral changes likely to occur in successive generations of minority immigrants.

Special data collection efforts are necessary to highlight high-risk subpopulations within these minority groups. This is especially important for members of the Asian and Pacific Islander and American Indian and Alaska Native populations. States with significant minority populations might consider adding more specific questions on race and ethnicity to their birth and death certificates. Regional estimates

in geographic regions with high concentrations of specific ethnic subgroups would provide additional information on the health-related diversity present in minority groups. Special surveys or oversampling the subpopulation of interest are also possible. The National Center for Health Statistics is considering these and other programmatic and methodological changes to enhance data on minority populations.

The 1992 Public Health Service report entitled *Improving Minority Health Statistics*⁴ contains 42 recommendations for addressing data gaps in various health statistics and provides a more complete blueprint for addressing the problem.

INTERVENTION NEEDS

American minority groups constitute a growing and aging segment of the population. Their contribution to the total population's burden of chronic diseases is likely to be much greater in the future than now because of the strong positive association between age and chronic disease. As the minority populations age, greater numbers will move into the age groups associated with chronic disease. The youthful age distributions (*Figures 2.1, 3.1, 4.3, 5.2*) of the minority populations provide great potential for early intervention to prevent chronic disease. Therefore, interventions to prevent chronic disease are particularly important and promising in these groups.

To be successful, interventions should be locally developed and carried out. They cannot be perceived as coming from the majority population. Such interventions work best in areas where sizable concentrations of a particular minority group reside, and such areas should be targeted first.

The data presented in this book suggest that, with the exception of the Asian and Pacific Islander population, certain problem areas stand

out among the racial and ethnic minority groups. In terms of mortality and morbidity, diabetes and cirrhosis clearly require attention. In terms of health behaviors, high percentages of the minority groups and of the white population report a sedentary lifestyle and, with the exception of the Asian and Pacific Islander population, being overweight. Minority-specific interventions addressing these society-wide problems are likely to be particularly helpful for these groups.

The summary socioeconomic and health statistics for the Asian and Pacific Islander population that are presented in this chapter are more favorable than those of the other minority populations. However, the perception that the Asian and Pacific Islander population does not contribute significantly to the burden of chronic disease in the total population could prevent public health practitioners from addressing current and future chronic disease prevention needs among the Asian and Pacific Islander subgroups. The Asian and Pacific Islander population has the highest immigration rate of all the racial and ethnic groups as well as a high growth rate (see *Table A.1* in Appendix A). By the year 2050, about 10 percent of the population is expected to be Asian and Pacific Islander.¹ Currently, the high portion of foreign-born Asians and Pacific Islanders and the wide diversity among the numerous ethnic subgroups within the population present unique challenges for chronic disease prevention in this population.

An additional challenge for chronic disease prevention among minority groups in the 1990s is to get the attention of community leaders who are currently more alarmed about the problems of violence, drug use, and HIV/AIDS. These are urgent problems among minority communities. Chronic diseases, however, remain the leading causes of death among these minority groups and deserve at least equal attention.

Public health practitioners would do well to learn from the successful and unsuccessful interventions aimed at these modern epidemics in minority populations. Collaborative interventions should also be promoted, such as drug abuse programs for youth that give equal weight to the dangers of tobacco, alcohol, and street drugs.

Ultimately, most minority health problems may well be traceable to poverty and undereducation. The most effective interventions against chronic disease in the long run may thus result from attempts to address these disparities. An important role for public health practitioners must be in lending their full support to political and social efforts to correct these inequities.

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A THE MINORITY POPULATIONS

The information in Appendix A provides background information on three areas: the terminology used in describing racial and ethnic minority groups, the limitations of the concepts and measures related to race and ethnicity, and the rationale and procedures we used in analyzing 1990 census data on the minority populations.

I Race and Ethnic Standards for Federal Statistics and Administrative Reporting

Current standards for collecting and publishing federal statistics on race and ethnicity were established by legislation in 1976 and by the Office of Management and Budget's (OMB) Directive 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting.¹ Current hearings by the OMB center on topics such as adding a multiracial category to the list of racial designations, including Hispanic as a racial category rather than as a separate ethnic category, and including Native Hawaiians as part of a Native American racial category rather than as part of the Asian or Pacific Islander category as they are now.^{2,3} The titles for the racial groups are also being debated. The portion of Directive 15 is included here as

background for the racial and ethnic categories used in this book.

DIRECTIVE NO. 15 TEXT: RACE AND ETHNIC STANDARDS FOR FEDERAL STATISTICS AND ADMINISTRATIVE REPORTING (AS ADOPTED ON MAY 12, 1977)²

This directive provides standard classifications for recordkeeping, collection, and presentation of data on race and ethnicity in federal program administrative reporting and statistical activities. These classifications should not be interpreted as being scientific or anthropological in nature, nor should they be viewed as determinants of eligibility for participation in any federal program. They have been developed in response to needs expressed by both the executive branch and the Congress to provide for the collection and use of compatible, nonduplicated, exchangeable racial and ethnic data by federal agencies.

DEFINITIONS

The basic racial and ethnic categories for federal statistics and program administrative reporting are defined as follows:

American Indian or Alaska Native. A person having origins in any of the original peoples of North American, and who maintains cultural identification through tribal affiliations or community recognition.

Asian or Pacific Islander. A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.

Black. A person having origins in any of the black racial groups of Africa.

Hispanic. A person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race.

White. A person having origins in any of the original peoples of Europe, North Africa, or the Middle East.

UTILIZATION FOR RECORDKEEPING AND REPORTING

To provide flexibility, it is preferable to collect data on race and ethnicity separately. If separate race and ethnic categories are used, the minimum designations are:

Race:

American Indian or Alaskan Native
Asian or Pacific Islander
Black
White

Ethnicity:

Hispanic origin
Not of Hispanic origin

When race and ethnicity are collected separately, the number of white and black persons who are Hispanic must be identifiable, and capable of being reported in that category.

If a combined format is used to collect racial and ethnic data, the minimum acceptable categories are:

American Indian or Alaskan Native
Asian or Pacific Islander
Black, not of Hispanic origin
Hispanic
White, not of Hispanic origin

The category which most closely reflects the individual's recognition in his community should be used for purposes of reporting on persons who are of mixed racial and/or ethnic origins.

II

Work Group Summaries from the CDC/ATSDR Workshop on the Use of Race and Ethnicity in Public Health Surveillance⁴

Limitations of Concepts, Measures, and Uses

Concepts

Current concepts of race and ethnicity in public health surveillance lack clarity, precision, and consensus.

- Race has no clear definition comparable to the *case definitions* of diseases.
- Because most associations between disease and race have no biologic basis, race—as a biological concept—is not useful in public health surveillance.
- Racial categories are too broad to be meaningful. Because of limitations in detail, within-group heterogeneity cannot be recognized, and important differences within racial groups may be masked.
- OMB Directive 15, which determines a minimum set of racial and ethnic categories for data collection by federal agencies, has no scientific basis and has institutionalized poorly conceived concepts and the misuse of race and ethnicity data in public health.
- Distinctions between race and ethnicity are unclear in public health surveillance and these classifications are neither mutually exclusive nor exhaustive.
- Concepts of race and ethnicity may change over time. For example, the increase in those

who self-reported as American Indians in the 1990 census may reflect an increased tendency among persons of mixed racial background to claim their American Indian heritage.

- Categories of race and ethnicity may have different meanings for those who collect surveillance information, such as census enumerators or physicians, than for survey participants or patients who must categorize themselves when completing questionnaires.

Emphasis on race and ethnicity in public health surveillance diverts attention from underlying risk factors.

- Race is a marker for many underlying problems of greater relevance to health, including socioeconomic status and cultural behavior-characteristics, which are social and not biological.

- Consideration of race and ethnicity as risk factors rather than risk markers may compromise scientific rigor. For example, race and ethnicity data are often used epidemiologically to explain all variation between groups that remains after controlling for age and gender. Because data on socioeconomic status and income are not available, associations between race or ethnicity and health outcomes may not be further examined for confounding.

Use of race and ethnicity data in surveillance may reinforce stereotyping, mistrust, and racism.

- The use of race and ethnicity data in public health surveillance may foster stereotyping and stigmatization.

- The collection of data on race and ethnicity may evoke mistrust of data gatherers by persons and groups about whom public health surveillance data are gathered.

- The use of race and ethnicity data fosters an inappropriate *minority model* of public health and health care. This model suggests that

affected subpopulations are *high risk, hard to reach, hard to serve, or noncompliant*.

Measures

Different methods of data collection on race and ethnicity result in inconsistencies across data sources.

- Information on race and ethnicity may reflect variations in the methods of different agencies and personnel who collect information, as illustrated by the different approaches of census enumerators, hospital personnel, and funeral directors.

- Discrepancies exist between race and ethnicity as self-reported or observer-reported.

- Data sources often do not measure variables that clarify race and ethnicity.

- Numerator and denominator data from different sources are often combined, even though race and ethnicity may have been determined differently for each source.

- As commonly assessed in federal health statistics, what is measured as *race* may be more accurately ethnicity or self-perceived membership in a population, defined by diverse characteristics.

Race and ethnicity data may be inconsistent because of temporal variations in definitions and responses.

- Race and ethnicity data may change because of changes in the way race and ethnicity are defined by data sources or because of changes in self-perception.

Current broad categories for data collection on race and ethnicity lack sensitivity to variations within groups that are defined in more subtle ways.

- Public health surveillance categories often fail to define subpopulations of interest or relevance. This consideration conflicts, however, with the

need for larger groupings to calculate statistically reliable rates. In addition, although data on race may require broad aggregation, data on ethnicity may require excessive disaggregation.

Uses

Public health surveillance race and ethnicity data are often not analyzed appropriately.

- Adjustments that are necessary because of errors in estimates (e.g., population undercounts) often are not made.
- Analysis by race or ethnicity only, without control for confounding variables, may distort or misrepresent complex health risks.
- Data on race and ethnicity are often used as surrogates for socioeconomic status (SES), income, or other predictors that are less readily available.
- Analysis of race and ethnicity data may not take into account the context in which the analysis is to be used. For example, the appropriate use of race in genetic studies may differ from that in setting public health policy.

Public health surveillance data on race and ethnicity are often misinterpreted.

- Associating disease with racial groups may suggest a spurious biologic connection, while confounding effects of other factors are often not made explicit when data are interpreted.
- Misinterpretation of race and ethnicity surveillance data can lead to detrimental social and political consequences for racial and ethnic groups, (e.g., stereotyping, quarantining, and "blaming the victim").

Race and ethnicity data may not be disseminated to affected communities.

- Populations addressed or targeted by surveillance efforts may not be informed of surveillance findings.

Interpreted data on racial or ethnic groups may not be linked with practical action.

- Surveillance findings may not be used in the design, implementation, or evaluation of indicated programs.

RECOMMENDATIONS FOR CONCEPTS, MEASURES, AND USES

The work groups proposed these recommendations for consideration only. Some of these recommendations may exceed the missions of CDC and ATSDR, may be in conflict with other recommendations, or may be in various stages of implementation.

Concepts

Study the concepts of race and ethnicity and prioritize issues in relation to public health surveillance, programs, and research.

- CDC should assemble several work groups to conduct these studies.
- Issues requiring further study include perceptions, identifications, membership affiliation, and concepts of race, ethnicity, and ancestry in the population. In addition, alternatives to the concepts of race and ethnicity as they are now used need to be explored.

Establish definitions for race and ethnicity tailored for specific purposes in public health surveillance.

- Focus on subgroups, especially within those identified Health departments, community organizations, and other groups should participate in developing these definitions.

Improve specificity by adding information.

- Focus on subgroups, especially within those identified racially as blacks, but also within other racial and ethnic groups.
- Add Hispanic as a category for race.
- Because race and ethnicity are imperfect predictors of health status, information should

be collected on other variables that would add a dimension of predictive power (e.g., years of education and number of generations a person's family has lived in the United States).

Periodically review and evaluate the definitions and uses of race and ethnicity in public health surveillance systems.

- Maintain flexibility of labels to accommodate changing needs and popular perceptions of group membership.

Measures

CDC, BC, other federal agencies, and state and local health departments should coordinate efforts to assure comparability and accuracy of measurements of race and ethnicity.

- Existing measures should be reviewed.
- A monitoring system should be established to ensure consistency and completeness.
- A consistent classification method is needed for people with mixed racial and ethnic backgrounds.
- Data collection forms should be revised to reflect consistent classification methods.
- Race and ethnicity data should be compatible across data systems.
- Ensure that methods and definitions for ascertainment of numerators and denominators are comparable.
- In calculating rates, denominators should be adjusted for estimated census undercounts.
- Race and ethnicity status should be self-identified using a multiple-choice option.
- Observer-derived measures of race and ethnicity should be eliminated.
- Eliminate, if possible, choice of the category "Other."

Additional measures of socioeconomic status and social groupings should be developed to avoid univariate analysis of race and ethnicity.

- Adopt formal years of education completed as the best and most practical measure of socioeconomic status in surveillance.

Uses

Collect data on race and ethnicity when the data will be used to improve public health (e.g. to assist in obtaining and targeting resources for affected communities).

- Despite the potential limitations of the categories of race and ethnicity, such information can assist in public health efforts to recognize disparities between groups for a variety of health outcomes.

When possible, race and ethnicity data should be collected and analyzed in relation to potential intervening variables (e.g., socioeconomic status.)

In all reports and other uses of surveillance data, the reason for analyzing race and/or ethnicity should be given, approaches to measurement of race and ethnicity should be specified, and findings should be interpreted.

The limitations of race and ethnicity data should be clearly stated and communicated to persons and organizations using the data.

Conduct analyses to document the effects of racism.

III

ANALYSES OF 1990 U.S. CENSUS DATA

In the 1990 census, data were collected on sex, race, and age from 100 percent of the enumerated population. Separate survey items were included for race (Figure A.1) and ethnicity (Figure A.2).

Figure A.1—1990 census item for race

1990 Race Question (Included on Both Short and Long Forms)

4. Race Fill ONE circle for the race that the person considers himself/herself to be. If Indian (Amer.), print the name of the enrolled or principle tribe. → If Other Asian or Pacific Islander (API), print one group, for example: Hmong, Fijian, Laotian, Thai, Tongan, Pakistani, Cambodian, and so on. → If Other race, print race. →	☐ White ☐ Black or Negro ☐ Indian (Amer.) (Print the name of the enrolled or principal tribe.) → ☐ Eskimo ☐ Aleut <u>Asian or Pacific Islander (API)</u> ☐ Chinese ☐ Japanese ☐ Filipino ☐ Asian Indian ☐ Hawaiian ☐ Samoan ☐ Korean ☐ Guamanian ☐ Vietnamese ☐ Other API → ☐ Other race (Print race) →
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Figure A.2—1990 census item for Hispanic ethnicity

Hispanic Question for the 1990 Census (Included on Both Short and Long Forms)

7. Is this person of Spanish/Hispanic origin? Fill ONE circle for each person. If Yes, other Spanish/Hispanic, print one group. →	☐ No (not Spanish/Hispanic) ☐ Yes, Mexican, Mexican-Am, Chicano ☐ Yes, Puerto Rican ☐ Yes, Cuban ☐ Yes, other Spanish/Hispanic (Print one group, for example: Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.) →
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Census analyses. The 1990 age- and race-modified census file was used to calculate the census population distributions presented in the tables and figures in chapters 2 through 5.⁵ Race and age distributions may differ slightly from census publications that did not use the age- and race-modified file. We reference census data that are presented on variables other than age, race, and sex since we did not compute the values.

Race-modification. Nearly 10 million persons classified themselves as other race in the 1990 census. These persons were not included in a specific racial category listed on the census form (Figure A.1). To conform with OMB directives and data sources other than the census and to serve the needs of some segments of the user community, these non-specified persons were assigned to a specific race.⁵ The rule used was to assign the race reported by a nearby person with an identical response to the Hispanic origin question. This was considered appropriate because over 95 percent of the persons who classified themselves as other race were of Hispanic origin. The assignment of a specified race was made on an individual basis, with no attempt to minimize racial heterogeneity within households. Further information on the race-assignment rule is available from the population division of the Bureau of the Census.

Age-modification. The 1990 census item on age asked respondents to report age of individuals in the household as of April 1, 1990. Review of 1990 data indicated that respondents tended to report age as of the date of the completion of the questionnaire, not as of April 1, 1990 (5). Respondents may have rounded up age if an individual's birthday was close to April 1. Demographers at the census bureau estimated that approximately 10 percent of persons in most age groups gave their age as 1 year older than they actually were on April 1, 1990. The

problem is most pronounced at age zero because individuals may have done more rounding up to age 1 year to avoid giving their baby's age as zero. Age in completed months was not collected.

The age data for individuals in households were modified by adjusting the reported birth year by race and sex for each of the 1990 census' 449 district offices to correspond with the national level quarterly distribution of births available from the National Center for Health Statistics. Approximately 100 million persons have an age in the race-age modified file that is 1 year different from what they reported in the 1990 census. Further information on the age-modification is available from the population division of the Bureau of the Census.

Population groups. Population distributions presented in this book may differ slightly from those in other publications because we chose to use mutually exclusive groups so that members of the Hispanic population would not be counted twice—in the Hispanic group and in one of the racial groups. The five population groups used in our census analyses were the Hispanic group (of any race) and the four non-Hispanic groups: white Americans, African-Americans, American Indians and Alaska Natives, and Asians and Pacific Islanders.

Background indicators on rate of growth. Chapters 2 through 5 referred to the fast rate of growth of the minority populations in comparison to the white population. Crude birth rates, death rates, and immigration rates are given for the white population and the minority populations by race and by Hispanic ethnicity and race in Table A.1.

U.S. county maps for minority groups-rationale and procedure. The rationale for presenting U.S. county maps for the minority groups stems from a note added to Objective 8.11 in *Healthy People 2000*: Increase to at least 50 percent the

proportion of counties that have established culturally and linguistically appropriate community health promotion programs for racial and ethnic minority populations. *This objective will be tracked in counties in which a racial or ethnic group constitutes more than 10 percent of the population.*⁶

The 1990 census count for each of the five population groups used in our census analyses for each state and county was divided by the population for that state and county to get a percentage for each minority group. The percentages and race indicators were output to a SAS dataset which was converted to an ASCII dataset and then downloaded. The ASCII dataset was imported into Foxpro and converted to a database file which could then be brought into MapInfo, opened as a table, and joined with the state and county table provided by the MapInfo software for the basic map structure. The resulting new table was used to shade the map according to one or more value ranges. The objects generated by these procedures were then saved back into the table, titles and footnotes added, and the default legend text was modified to better describe our data.

Some of the 13 counties in which the Asian and Pacific Islander population comprises over 10 percent of the county population did not show up on the county level map so a map was not generated for this group. The small size of the county maps in this book make it difficult to determine the counties with specific minority percentages above 10 percent. Because the actual percentages of the four minority groups in the counties provide more information than the

maps, minority-specific lists of the counties in which the specific minority population is over 10 percent of the total population are included (Table A.2 - A.5). The lists are organized by state.

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⁵U.S. Bureau of the Census. Population Division. Age, sex, race, and Hispanic origin information from the 1990 census: a comparison of census results with results where age and race have been modified, 1990 CPH-L-74. Washington, DC, 1991.

⁶Public Health Service. National Health Promotion and Disease Prevention Objectives. *In*: Healthy People 2000; National Health Promotion and Disease Prevention Objectives. Washington, DC: Government Printing Office; DHHS publication no.(PHS)91-50212, 1991:261.

Table A.1—Selected demographic indicators* by race and ethnic group, United States, 1990

Race and ethnic group	Crude birth rate	Crude death rate	Natural increase rate [†]	Immigration rate
By race:				
African-American	24.4	8.7	15.7	1.5
American Indian/ Alaska Native	25.5	4.2	21.3	0.0
Asian/ Pacific Islander	22.2	2.3	19.9	38.3
White American	14.3	9.6	4.7	0.7
By ethnicity:				
<i>Hispanic</i>				
Of any race	24.7	3.3	21.4	13.5
<i>Non-Hispanic</i>				
African-American	24.1	8.5	15.6	2.1
American Indian/ Alaska Native	24.6	4.1	20.5	0.1
Asian/ Pacific Islander	21.1	2.9	18.2	34.2
White American	15.4	9.0	6.4	1.9

*Rates are given per 1,000 population.

[†]Natural increase rate = crude birth rate minus crude death rate.

Adapted from the U.S. Bureau of the Census, Current Population Reports, Series P25, No. 1095. U.S. Population estimates, by age, sex, race, and Hispanic origin: 1980 to 1991, February 1993:30–31.

Table A.2—List of counties in which the population of African-Americans is more than 10 percent, by state, United States, 1990

STATE: County (percentage of non-Hispanic African-Americans in county)

ALABAMA: AUTAUGA (19.89), BALDWIN (12.82), BARBOUR (43.89), BIBB (20.92), BULLOCK (71.98), BUTLER (40.12), CALHOUN (18.51), CHAMBERS (35.77), CHILTON (11.29), CHOCTAW (44.04), CLARKE (42.49), CLAY (16.34), COFFEE (17.16), COLBERT (16.54), CONECUH (41.92), COOSA (34.14), COVINGTON (13.08), CRENSHAW (25.98), DALE (17.67), DALLAS (57.71), ELMORE (22.34), ESCAMBIA (28.20), ETOWAH (13.81), FAYETTE (12.19), GENEVA (11.91), GREENE (80.37), HALE (59.18), HENRY (34.92), HOUSTON (23.24), JEFFERSON (35.03), LAMAR (11.85), LAWRENCE (15.20), LEE (23.37), LIMESTONE (13.13), LOWNDES (74.32), MACON (85.42), MADISON (20.02), MARENGO (50.72), MOBILE (31.04), MONROE (39.03), MONTGOMERY (41.64), PERRY (64.24), PICKENS (41.67), PIKE (34.48), RANDOLPH (23.51), RUSSELL (38.50), SUMTER (69.96), TALLADEGA (30.53), TALLAPOOSA (26.24), TUSCALOOSA (26.10), WASHINGTON (27.63), WILCOX (68.78)

ARKANSAS: ARKANSAS (21.82), ASHLEY (27.17), BRADLEY (30.89), CALHOUN (24.67), CHICOT (56.07), CLARK (22.87), CLEVELAND (13.53), COLUMBIA (34.96), CONWAY (14.93), CRITTENDEN (42.73), CROSS (24.72), DALLAS (38.43), DESHA (42.33), DREW (27.31), HEMPSTEAD (29.84), HOWARD (21.42), JACKSON (14.52), JEFFERSON (43.03), LAFAYETTE (38.37), LEE (57.05), LINCOLN (35.76), LITTLE RIVER (20.94), MILLER (22.38), MISSISSIPPI (27.77), MONROE (38.85), NEVADA (31.58), OUACHITA (35.04), PHILLIPS (54.47), PRAIRIE (13.60), PULASKI (26.32), ST. FRANCIS (47.31), UNION (30.05), WOODRUFF (31.33)

CALIFORNIA: ALAMEDA (17.48), SOLANO (12.91)

COLORADO: DENVER (12.41)

DELAWARE: KENT (18.33), NEW CASTLE (16.29), SUSSEX (16.61)

DISTRICT OF COLUMBIA: (65.20)

FLORIDA: ALACHUA (18.81), BAKER (14.81), BRADFORD (20.01), BROWARD (14.89), CALHOUN (15.03), COLUMBIA (17.94), DADE (19.12), DE SOTO (15.39), DUVAL (24.15), ESCAMBIA (19.92), FRANKLIN (12.35), GADSDEN (57.49), GLADES (12.08), GULF (18.68), HAMILTON (38.60), HENDRY (16.24), HILLSBOROUGH (12.85), JACKSON (25.91), JEFFERSON (43.25), LAFAYETTE (13.84), LEON (24.01), LEVY (12.38), LIBERTY (17.35), MADISON (41.44), MARION (12.60), ORANGE (14.81), PALM BEACH (11.98), POLK (13.20), PUTNAM (18.25), ST. LUCIE (16.12), SUMTER (16.06), SUWANNEE (14.62), TAYLOR (17.93), UNION (22.64), WAKULLA (12.89), WASHINGTON (14.47)

GEORGIA: APPLING (20.76), ATKINSON (26.62), BACON (15.36), BAKER (51.07), BALDWIN (42.17), BARROW (11.27), BEN HILL (31.21), BERRIEN (11.60), BIBB (41.57), BLECKLEY (22.32), BROOKS (41.34), BRYAN (14.83), BULLOCH (25.97), BURKE (52.25), BUTTS (35.37), CALHOUN (58.75), CAMDEN (20.10), CANDLER (31.03), CARROLL (15.67), CHARLTON (27.68), CHATHAM (37.90), CHATTAHOOCHEE (30.43), CLARKE (26.11), CLAY (60.37), CLAYTON (23.67), CLINCH (27.21), COFFEE (25.29), COLQUITT (23.99), COOK (29.93), COWETA (22.59), CRAWFORD (30.60), CRISP (40.68), DECATUR (38.89), DE KALB (41.98), DODGE (27.51), DOOLY (48.80), DOUGHERTY (50.07), EARLY (43.82), ECHOLS (11.01), EFFINGHAM (14.03), ELBERT (30.10), EMANUEL (32.44), EVANS (33.84), FLOYD (13.57), FULTON (49.71), GLASCOCK (12.60), GLYNN (25.40), GRADY (31.35), GREENE (49.75), HANCOCK (79.02), HARRIS (25.63), HART (20.22), HEARD (13.33), HOUSTON (21.62), IRWIN (30.11), JASPER (34.73), JEFF DAVIS (15.18), JEFFERSON (55.66), JENKINS (41.36), JOHNSON (33.93), JONES (25.59), LAMAR (34.07), LANIER (26.31), LAURENS (33.11), LEE (19.16), LIBERTY (38.53), LINCOLN (37.64), LONG (21.56), LOWNDES (31.79), MCDUFFIE (36.32), MCINTOSH (42.93), MACON (58.52), MARION (41.14), MERIWETHER (44.37), MILLER (27.47), MITCHELL (47.40), MONROE (31.50), MONTGOMERY (28.24), MORGAN (34.43), MUSCOGEE (37.70), NEWTON (22.22), OGLETHORPE (24.56), PEACH (47.29), PIERCE (11.75), PIKE (19.97), POLK (14.11), PULASKI

(32.35), PUTNAM (33.41), QUITMAN (50.11), RANDOLPH (57.70), RICHMOND (41.78), SCHLEY (34.06), SCREVEN (44.77), SEMINOLE (32.56), SPALDING (28.93), STEPHENS (11.92), STEWART (63.09), SUMTER (46.35), TALBOT (62.00), TALIAFERRO (60.16), TATTNALL (29.09), TAYLOR (43.04), TELFAIR (34.13), TERRELL (59.66), THOMAS (37.76), TIFT (26.55), TOOMBS (23.36), TREUTLEN (33.08), TROUP (29.92), TURNER (40.50), TWIGGS (45.69), UPSON (27.63), WALTON (18.30), WARE (25.92), WARREN (60.15), WASHINGTON (51.44), WAYNE (19.38), WEBSTER (50.02), WHEELER (30.06), WILCOX (31.71), WILKES (46.19), WILKINSON (42.04), WORTH (30.53)

ILLINOIS: ALEXANDER (32.77), COOK (25.51), KANKAKEE (14.86), MACON (12.04), PEORIA (13.56), PULASKI (32.70), ST. CLAIR (27.02)

INDIANA: LAKE (24.27), MARION (21.21)

KANSAS: GEARY (22.96), WYANDOTTE (27.26)

KENTUCKY: CHRISTIAN (24.26), FAYETTE (13.29), FULTON (18.55), JEFFERSON (17.01), SIMPSON (11.01), TRIGG (11.83), UNION (15.22)

LOUISIANA: ACADIA (18.15), ALLEN (20.74), ASCENSION (22.69), ASSUMPTION (32.12), AVOUELLES (26.79), BEAUREGARD (14.79), BIENVILLE (43.37), BOSSIER (20.11), CADDO (39.93), CALCASIEU (22.79), CALDWELL (17.94), CATAHOULA (25.94), CLAIBORNE (46.10), CONCORDIA (36.32), DE SOTO (43.82), EAST BATON ROUGE (34.70), EAST CARROLL (64.57), EAST FELICIANA (46.98), EVANGELINE (26.00), FRANKLIN (31.34), GRANT (14.39), IBERIA (29.27), IBERVILLE (46.09), JACKSON (29.16), JEFFERSON (17.47), JEFFERSON DAVIS (18.93), LAFAYETTE (22.26), LAFOURCHE (12.42), LINCOLN (39.65), MADISON (59.30), MOREHOUSE (41.36), NATCHITOCHES (37.55), ORLEANS (61.45), OUACHITA (30.94), PLAQUEMINES (23.10), POINTE COUPEE (41.02), RAPIDES (27.88), RED RIVER (38.17), RICHLAND (36.32), SABINE (17.51), ST. CHARLES (23.96), ST. HELENA (51.80), ST. JAMES (49.48), ST. JOHN THE BAPTIST (35.93), ST. LANDRY (40.11), ST. MARTIN (32.88), ST. MARY (31.45), TANGIPAHOA (28.53), TENSAS (53.02), TERREBONNE (16.44), UNION (27.75),

VERMILION (13.85), VERNON (20.42), WASHINGTON (30.83), WEBSTER (31.54), WEST BATON ROUGE (35.93), WEST CARROLL (16.62), WEST FELICIANA (54.91), WINN (29.35)

MARYLAND: ANNE ARUNDEL (11.70), BALTIMORE (12.24), CALVERT (15.58), CAROLINE (16.41), CHARLES (18.06), DORCHESTER (27.74), HOWARD (11.57), KENT (19.72), MONTGOMERY (11.81), PRINCE GEORGE'S (50.21), QUEEN ANNE'S (11.24), ST. MARY'S (13.43), SOMERSET (37.90), TALBOT (17.94), WICOMICO (22.20), WORCESTER (21.27) BALTIMORE CITY (58.95)

MASSACHUSETTS: SUFFOLK (21.32)

MICHIGAN: BERRIEN (15.32), GENESEE (19.47), LAKE (13.31), MUSKEGON (13.51), SAGINAW (17.14), WASHTENAW (11.10), WAYNE (40.08)

MISSISSIPPI: ADAMS (48.55), ALCORN (11.13), AMITE (45.21), ATTALA (39.29), BENTON (39.19), BOLIVAR (62.60), CALHOUN (26.99), CARROLL (39.33), CHICKASAW (38.40), CHOCTAW (30.05), CLAIBORNE (81.81), CLARKE (34.45), CLAY (53.24), COAHOMA (64.22), COPIAH (50.32), COVINGTON (34.97), DE SOTO (12.73), FORREST (30.67), FRANKLIN (36.70), GREENE (21.38), GRENADA (41.22), HARRISON (19.42), HINDS (50.79), HOLMES (75.62), HUMPHREYS (67.39), ISSAQUENA (55.84), JACKSON (20.40), JASPER (50.72), JEFFERSON (85.87), JEFFERSON DAVIS (54.37), JONES (24.92), KEMPER (55.24), LAFAYETTE (25.00), LAMAR (11.93), LAUDERDALE (34.69), LAWRENCE (32.98), LEAKE (35.42), LEE (21.31), LEFLORE (60.45), LINCOLN (29.79), LOWNDES (37.09), MADISON (43.98), MARION (30.10), MARSHALL (50.51), MONROE (30.13), MONTGOMERY (43.66), NESHoba (18.56), NEWTON (28.72), NOXUBEE (68.03), OKTIBBEHA (34.22), PANOLA (48.18), PEARL RIVER (14.26), PERRY (22.52), PIKE (45.59), PONTOTOC (14.55), PRENTISS (11.77), QUITMAN (59.00), RANKIN (16.72), SCOTT (37.90), SHARKEY (65.85), SIMPSON (32.28), SMITH (21.87), STONE (21.72), SUNFLOWER (63.92), TALLAHATCHIE (58.09), TATE (34.35), TIPPAAH (16.50), TUNICA (74.61), UNION (14.50), WALTHALL (42.11), WARREN (38.88), WASHINGTON (57.48), WAYNE (35.47), WEBSTER (21.89), WILKINSON (67.29), WINSTON (41.50), YALOBUSHA (37.50), YAZOO (52.54)

MISSOURI: JACKSON (21.32), MISSISSIPPI (19.36), NEW MADRID (15.61), PEMISCOT (25.44), PULASKI (13.35), ST. LOUIS (13.99), ST. LOUIS CITY (47.37)

NEW JERSEY: ATLANTIC (16.85), BURLINGTON (13.97), CAMDEN (15.52), CUMBERLAND (16.09), ESSEX (39.39), HUDSON (12.67), MERCER (18.29), PASSAIC (12.83), SALEM (14.41), UNION (18.12)

NEW YORK: BRONX (30.93), ERIE (11.19), KINGS (34.80), MONROE (11.62), NEW YORK (17.66), QUEENS (20.12), WESTCHESTER (13.10)

NORTH CAROLINA: ALAMANCE (19.19), ANSON (47.19), BEAUFORT (31.12), BERTIE (61.37), BLADEN (38.96), BRUNSWICK (18.00), CABARRUS (12.95), CAMDEN (25.08), CASWELL (40.65), CHATHAM (22.70), CHOWAN (37.34), CLEVELAND (20.91), COLUMBUS (30.50), CRAVEN (25.68), CUMBERLAND (31.44), CURRITUCK (11.24), DUPLIN (33.01), DURHAM (37.07), EDGECOMBE (55.83), FORSYTH (24.78), FRANKLIN (35.13), GASTON (12.92), GATES (44.88), GRANVILLE (38.80), GREENE (42.28), GUILFORD (26.29), HALIFAX (49.54), HARNETT (22.45), HERTFORD (57.53), HOKE (43.07), HYDE (32.86), IREDELL (15.95), JOHNSTON (17.64), JONES (38.98), LEE (22.50), LENOIR (39.21), MARTIN (44.46), MECKLENBURG (26.19), MONTGOMERY (25.66), MOORE (18.36), NASH (31.39), NEW HANOVER (19.96), NORTHAMPTON (58.94), ONSLOW (19.47), ORANGE (15.82), PAMLICO (25.85), PASQUOTANK (36.93), PENDER (30.29), PERQUIMANS (32.75), PERSON (30.09), PITT (33.19), RICHMOND (28.75), ROBESON (24.85), ROCKINGHAM (20.34), ROWAN (16.02), RUTHERFORD (11.40), SAMPSON (33.05), SCOTLAND (35.76), STANLY (11.50), TYRRELL (39.99), UNION (15.87), VANCE (44.93), WAKE (20.70), WARREN (56.87), WASHINGTON (45.42), WAYNE (32.20), WILSON (37.59)

OHIO: ALLEN (11.17), CUYAHOGA (24.68), FRANKLIN (15.84), HAMILTON (20.87), LUCAS (14.71), MAHONING (14.83), MONTGOMERY (17.71), SUMMIT (11.84)

OKLAHOMA: CHOCTAW (12.77), COMANCHE (17.56), LOGAN (13.71), MUSKOGEE (13.95),

OKFUSKEE (11.47), OKLAHOMA (14.62), OKMULGEE (12.10)

PENNSYLVANIA: ALLEGHENY (11.15), DAUPHIN (14.69), DELAWARE (11.10), PHILADELPHIA (39.37)

SOUTH CAROLINA: ABBEVILLE (31.43), AIKEN (24.13), ALLENDALE (67.74), ANDERSON (16.60), BAMBERG (61.28), BARNWELL (42.76), BEAUFORT (28.26), BERKELEY (24.01), CALHOUN (51.48), CHARLESTON (34.76), CHEROKEE (20.50), CHESTER (39.88), CHESTERFIELD (33.23), CLARENDON (56.33), COLLETON (44.79), DARLINGTON (39.95), DILLON (43.64), DORCHESTER (22.91), EDGEFIELD (46.26), FAIRFIELD (58.08), FLORENCE (38.61), GEORGETOWN (43.06), GREENVILLE (17.96), GREENWOOD (30.09), HAMPTON (54.11), HORRY (17.39), JASPER (57.29), KERSHAW (28.25), LANCASTER (25.29), LAURENS (28.17), LEE (62.27), LEXINGTON (11.00), MCCORMICK (58.46), MARION (54.52), MARLBORO (48.46), NEWBERRY (34.60), ORANGEBURG (57.92), RICHLAND (41.54), SALUDA (33.05), SPARTANBURG (20.62), SUMTER (43.02), UNION (29.87), WILLIAMSBURG (64.00), YORK (20.00)

TENNESSEE: CARROLL (11.38), CROCKETT (16.83), DAVIDSON (23.28), DYER (11.87), FAYETTE (43.91), GIBSON (19.26), GILES (13.20), HAMILTON (19.03), HARDEMAN (37.32), HAYWOOD (49.50), LAKE (23.68), LAUDERDALE (30.86), MADISON (30.86), MAURY (15.69), MONTGOMERY (17.51), SHELBY (43.44), TIPTON (23.49), TROUSDALE (14.39)

TEXAS: ANDERSON (23.21), ANGELINA (15.11), AUSTIN (12.89), BASTROP (11.39), BELL (18.34), BOWIE (21.67), BRAZOS (11.03), BURLESON (17.56), CAMP (23.73), CASS (20.08), CHAMBERS (12.66), CHEROKEE (16.71), COLORADO (16.68), CORYELL (20.74), DALLAS (19.58), FALLS (26.75), FORT BEND (20.30), FREESTONE (18.97), GALVESTON (17.24), GREGG (18.91), GRIMES (24.19), HARRIS (18.78), HARRISON (27.77), HOUSTON (29.38), JASPER (18.83), JEFFERSON (30.85), KAUFMAN (13.86), LAMAR (14.49), LEE (13.67), LEON (12.64), LIBERTY (12.97), LIMESTONE (19.74), MCLENNAN (15.37), MADISON (23.36), MARION (30.98),

MATAGORDA (13.66), MILAM (12.58), MORRIS (24.39), NACOGDOCHES (16.36), NAVARRO (18.86), NEWTON (22.32), PANOLA (18.34), POLK (12.55), RED RIVER (19.96), ROBERTSON (27.08), RUSK (20.41), SABINE (11.58), SAN AUGUSTINE (27.95), SAN JACINTO (15.48), SHELBY (21.38), SMITH (20.70), TARRANT (11.84), TITUS (13.29), TRINITY (14.36), TYLER (11.93), UPSHUR (12.30), WALKER (23.73), WALLER (37.37), WASHINGTON (20.79), WHARTON (15.49)

VIRGINIA BEACH CITY (13.68), WILLIAMSBURG CITY (15.08)

WEST VIRGINIA: MCDOWELL (13.43)

WISCONSIN: MILWAUKEE (20.22)

Source: U.S. Bureau of the Census, 1990.

VIRGINIA: ACCOMACK (34.18), AMELIA (31.97), AMHERST (20.02), APPOMATTOX (22.85), BRUNSWICK (58.33), BUCKINGHAM (40.68), CAMPBELL (14.41), CAROLINE (37.63), CHARLES CITY (63.15), CHARLOTTE (36.43), CHESTERFIELD (12.92), CULPEPER (17.15), CUMBERLAND (38.63), DINWIDDIE (35.57), ESSEX (37.52), FAUQUIER (11.13), FLUVANNA (22.87), GLOUCESTER (11.09), GOOCHLAND (29.65), GREENSVILLE (55.02), HALIFAX (39.04), HENRICO (20.05), HENRY (23.04), ISLE OF WIGHT (31.45), JAMES CITY (18.45), KING AND QUEEN (41.87), KING GEORGE (20.14), KING WILLIAM (30.19), LANCASTER (29.81), LOUISA (25.63), LUNENBURG (37.36), MADISON (14.24), MATHEWS (13.90), MECKLENBURG (38.28), MIDDLESEX (24.43), NELSON (18.77), NEW KENT (20.53), NORTHAMPTON (46.13), NORTHUMBERLAND (29.29), NOTTOWAY (40.85), ORANGE (14.29), PITTSYLVANIA (26.71), POWHATAN (21.36), PRINCE EDWARD (36.03), PRINCE GEORGE (28.63), PRINCE WILLIAM (11.46), RICHMOND (30.06), SOUTHAMPTON (44.71), SURRY (55.49), SUSSEX (58.09), WESTMORELAND (32.91), YORK (15.49), ALEXANDRIA CITY (21.60), BEDFORD CITY (21.85), CHARLOTTESVILLE CITY (21.14), CHESAPEAKE CITY (27.29), CLIFTON FORGE CITY (14.85), COVINGTON CITY (13.92), DANVILLE CITY (36.47), EMPORIA CITY (44.99), FRANKLIN CITY (53.32), FREDERICKSBURG CITY (21.46), HAMPTON CITY (38.54), HOPEWELL CITY (25.41), LEXINGTON CITY (11.63), LYNCHBURG CITY (26.31), MARTINSVILLE CITY (36.69), NEWPORT NEWS CITY (33.22), NORFOLK CITY (38.69), PETERSBURG CITY (71.67), PORTSMOUTH CITY (47.06), RICHMOND CITY (55.01), ROANOKE CITY (24.17), SOUTH BOSTON CITY (36.43), STAUNTON CITY (12.56), SUFFOLK CITY (44.40),

Table A.3.—List of counties in which the population of American Indians and Alaska Natives is more than 10 percent, by state, United States, 1990

STATE: County (percentage of non-Hispanic American Indians and Alaska Natives in county)

ALASKA: ALEUTIANS EAST BOROUGH (42.21), ALEUTIANS WEST CENSUS AREA (11.25), BETHEL CENSUS AREA (83.09), BRISTOL BAY BOROUGH (31.63), DILLINGHAM CENSUS AREA (72.78), HAINES BOROUGH (13.18), JUNEAU BOROUGH (12.57), KETCHIKAN GATEWAY BOROUGH (13.31), KODIAK ISLAND BOROUGH (15.77), LAKE & PENINSULA BOROUGH (74.64), NOME CENSUS AREA (74.02), NORTH SLOPE BOROUGH (72.00), NORTHWEST ARCTIC BOROUGH (84.93), PRINCE OF WALES-OUTER KETCHIKAN (37.05), SITKA BOROUGH (20.47), SKAGWAY-YAKUTAT-ANGOON CENSUS AREA (37.81), SOUTHEAST FAIRBANKS CENSUS AREA (12.89), VALDEZ-CORDOVA CENSUS AREA (12.25), WADE HAMPTON CENSUS AREA (93.21), WRANGELL-PETERSBURG CENSUS AREA (19.16), YUKON-KOYUKUK CENSUS AREA (55.66)

ARIZONA: APACHE (77.01), COCONINO (28.73), GILA (12.72), GRAHAM (14.53), LA PAZ (14.50), NAVAJO (51.28)

CALIFORNIA: ALPINE (23.09)

COLORADO: MONTEZUMA (11.02)

MICHIGAN: BARAGA (11.45), CHIPPEWA (11.00), MACKINAC (15.84)

MINNESOTA: BELTRAMI (16.30), MAHNOMEN (23.47)

MISSISSIPPI: NESHOBIA (12.78)

MONTANA: BIG HORN (54.51), BLAINE (39.19), GLACIER (55.89), HILL (15.44), LAKE (20.51), ROOSEVELT (48.13), ROSEBUD (26.04)

NORTH CAROLINA: HOKE (13.79), ROBESON (38.26), SWAIN (27.04)

NORTH DAKOTA: BENSON (38.39), MCKENZIE (14.07), MOUNTRAIL (19.76), ROLETTE (66.25), SIOUX (74.77),

NEBRASKA: THURSTON (43.28)

NEW MEXICO: CIBOLA (37.60), MCKINLEY (70.46), RIO ARriba (14.07), SAN JUAN (36.16), SANDOVAL (19.24)

OKLAHOMA: ADAIR (43.35), ATOKA (12.26), BRYAN (14.08), CADDO (21.24), CHEROKEE (32.99), CHOCTAW (14.95), COAL (16.35), CRAIG (19.00), DELAWARE (25.08), HASKELL (14.47), HUGHES (16.95), JOHNSTON (15.53), LATIMER (15.12), LE FLORE (11.67), MAYES (17.88), MCCURTAIN (14.35), MCINTOSH (18.12), MUSKOGEE (13.13), NOWATA (16.20), OKFUSKEE (19.97), OKMULGEE (12.00), OSAGE (14.54), OTTAWA (18.05), PITTSBURG (12.17), PONTOTOC (13.70), POTTAWATOMIE (11.29), PUSHMATAHA (14.99), ROGERS (12.77), SEMINOLE (16.67), SEQUOYAH (20.54)

OREGON: JEFFERSON (18.66)

SOUTH DAKOTA: BENNETT (45.63), BUFFALO (77.49), CHARLES MIX (21.72), CORSON (47.70), DEWEY (66.01), JACKSON (42.05), LYMAN (28.59), MELLETTE (46.47), ROBERTS (22.87), SHANNON (93.12), TODD (81.29), ZIEBACH (62.84)

UTAH: SAN JUAN (53.74)

WASHINGTON: FERRY (17.81)

WISCONSIN: MENOMINEE (87.97), SAWYER (14.94)

WYOMING: FREMONT (17.49)

Source: U.S. Bureau of the Census, 1990.

Table A.4.—List of counties in which the population of Asians and Pacific Islanders is more than 10 percent, by state, United States, 1990

STATE: County (percentage of non-Hispanic Asians and Pacific Islanders in county)

ALASKA: ALEUTIANS EAST BOROUGH (17.33)

CALIFORNIA: ALAMEDA (14.49), SAN FRANCISCO (28.48), SAN JOAQUIN (11.64), SAN MATEO (16.29), SANTA CLARA (16.84), SOLANO (11.92)

HAWAII: HAWAII (52.70), HONOLULU (59.97), KALAWAO (73.08), KAUAI (56.63), MAUI (54.11)

NEW YORK: QUEENS (11.86)

Source: U.S. Bureau of the Census, 1990.

Table A.5.—List of counties in which the population of Hispanic Americans is more than 10 percent, by state, United States, 1990

STATE: County (percentage of Hispanic Americans in county)

ARIZONA: COCHISE (29.07), GILA (18.61), GRAHAM (25.16), GREENLEE (43.16), LA PAZ (22.67), MARICOPA (16.28), PIMA (24.48), PINAL (29.27), SANTA CRUZ (78.25), YUMA (40.59)

CALIFORNIA: ALAMEDA (14.21), COLUSA (33.33), CONTRA COSTA (11.36), FRESNO (35.45), GLENN (19.99), IMPERIAL (65.81), KERN (27.97), KINGS (34.05), LOS ANGELES (37.81), MADERA (34.51), MERCED (32.57), MONO (11.31), MONTEREY (33.62), NAPA (14.39), ORANGE (23.43), RIVERSIDE (26.27), SACRAMENTO (11.67), SAN BENITO (45.78), SAN BERNARDINO (26.69), SAN DIEGO (20.45), SAN FRANCISCO (13.91), SAN JOAQUIN (23.44), SAN LUIS OBISPO (13.32), SAN MATEO (17.65), SANTA BARBARA (26.57), SANTA CLARA (21.00), SANTA CRUZ (20.37), SOLANO (13.37), STANISLAUS (21.83), SUTTER (16.44), TULARE (38.76), VENTURA (26.45), YOLO (19.97), YUBA (11.55)

COLORADO: ADAMS (18.56), ALAMOSA (38.58), ARCHULETA (23.27), BENT (27.16), CONEJOS (59.88), COSTILLA (76.87), CROWLEY (23.11), DENVER (22.96), EAGLE (13.30), HUERFANO (40.41), LA PLATA (11.11), LAKE (23.87), LAS ANIMAS (44.17), MONTROSE (11.20), MORGAN (18.39), OTERO (35.19), PROWERS (23.24), PUEBLO (35.83), RIO GRANDE (40.32), SAGUACHE (45.59), SAN JUAN (15.84), WELD (20.86)

FLORIDA: COLLIER (13.63), DADE (49.22), HARDEE (23.40), HENDRY (22.34), HILLSBOROUGH (12.82), MONROE (12.28), OKEECHOBEE (11.79), OSCEOLA (11.94)

IDAHO: CANYON (13.14), CASSIA (13.43), MINIDOKA (19.29), OWYHEE (16.78), POWER (13.22)

ILLINOIS: COOK (13.60), KANE (13.71)

KANSAS: FINNEY (25.26), FORD (14.87), GRANT

(21.55), HASKELL (14.33), KEARNY (16.66), SEWARD (19.53), STANTON (16.80), WICHITA (11.82)

NEBRASKA: SCOTT'S BLUFF (14.54)

NEW JERSEY: CUMBERLAND (13.29), ESSEX (12.56), HUDSON (33.17), PASSAIC (21.65), UNION (13.73)

NEW MEXICO: BERNALILLO (37.10), CATRON (28.40), CHAVES (36.77), CIBOLA (34.08), COLFAX (47.89), CURRY (23.73), DE BACA (32.68), DONA ANA (56.42), EDDY (35.27), GRANT (50.81), GUADALUPE (84.34), HARDING (46.71), HIDALGO (50.08), LEA (29.76), LINCOLN (28.05), LOS ALAMOS (11.08), LUNA (47.64), MCKINLEY (12.79), MORA (84.97), OTERO (23.84), QUAY (37.51), RIO ARriba (72.62), ROOSEVELT (27.23), SAN JUAN (13.11), SAN MIGUEL (79.60), SANDOVAL (27.44), SANTA FE (49.47), SIERRA (23.99), SOCORRO (47.80), TAOS (64.92), TORRANCE (37.84), UNION (33.71), VALENCIA (50.26)

NEVADA: CLARK (11.18), ELKO (12.94), HUMBOLDT (18.18), LANDER (12.59), PERSHING (15.27)

NEW YORK: BRONX NY (43.45), KINGS (20.10), NEW YORK (25.99), QUEENS (19.53)

OKLAHOMA: CIMARRON (12.48), HARMON (17.30), JACKSON (11.56), TILLMAN (14.07)

OREGON: HOOD RIVER (16.28), MALHEUR (19.80)

TEXAS: ANDREWS (31.75), ARANSAS (20.05), ATASCOSA (52.62), BAILEY (38.79), BANDERA (11.10), BASTROP (18.12), BEE (51.36), BELL (13.08), BEXAR (49.70), BLANCO (14.07), BORDEN (15.02), BRAZORIA (17.63), BRAZOS (13.71), BREWSTER (42.64), BRISCOE (18.62), BROOKS (89.44), BROWN (11.05), BURLESON (11.92), CALDWELL (37.84), CALHOUN (36.18), CAMERON (81.88), CASTRO (46.16), CHILDRESS (14.33), COCHRAN (42.43), COKE (12.32), COLEMAN (11.73), COLLINGSWORTH (15.70), COLORADO (15.41), COMAL (22.89), COMANCHE (16.48), CONCHO (39.22), COTTLE (16.33), CRANE (33.90), CROCKETT (49.56),

CROSBY (42.59), CULBERSON (71.00), DALLAM (21.08), DALLAS (17.04), DAWSON (42.65), DE WITT (24.24), DEAF SMITH (48.85), DICKENS (18.63), DIMMIT (83.27), DUVAL (87.22), ECTOR (31.37), EDWARDS (52.16), EL PASO (69.58), ELLIS (13.20), FALLS (11.70), FISHER (20.59), FLOYD (39.79), FOARD (12.99), FORT BEND (19.47), FRIO (72.36), GAINES (32.63), GALVESTON (14.24), GARZA (28.27), GILLESPIE (14.10), GLASSCOCK (29.30), GOLIAD (35.87), GONZALES (35.70), GRIMES (14.11), GUADALUPE (29.67), HALE (41.61), HALL (18.62), HANSFORD (20.08), HARDEMAN (11.15), HARRIS (22.88), HASKELL (19.24), HAYS (27.81), HEMPHILL (11.08), HIDALGO (85.25), HOCKLEY (31.63), HOWARD (26.61), HUDSPETH (66.38), IRION (23.63), JACKSON (21.26), JEFF DAVIS (39.57), JIM HOGG (91.19), JIM WELLS (72.19), JONES (16.90), KARNES (47.50), KENDALL (16.40), KENEDY (78.70), KENT (11.88), KERR (16.51), KIMBLE (18.73), KING (14.97), KINNEY (50.34), KLEBERG (61.20), KNOX (22.49), LA SALLE (77.43), LAMB (36.55), LAMPASAS (12.97), LIPSCOMB (12.06), LIVE OAK (34.78), LOVING (13.08), LUBBOCK (22.91), LYNN (41.71), MARTIN (39.55), MASON (19.60), MATAGORDA (24.61), MAVERICK (93.53), MCCULLOCH (26.40), MCLENNAN (12.50), MCMULLEN (39.17), MEDINA (44.43), MENARD (32.24), MIDLAND (21.37), MILAM (15.06), MITCHELL (29.80), MOORE (31.87), NOLAN (25.59), NUECES (52.23), OCHILTREE (17.98), PARMER (41.53), PECOS (56.77), POTTER (19.66), PRESIDIO (81.62), REAGAN (43.00), REAL (23.80), REEVES (72.83), REFUGIO (39.67), ROBERTSON (12.28), RUNNELS (24.26), SAN PATRICIO (50.74), SAN SABA (18.48), SCHLEICHER (35.52), SCURRY (23.90), SHERMAN (18.82), SOMERVELL (13.97), STARR (97.22), STERLING (25.45), STONEWALL (11.77), SUTTON (45.13), SWISHER (30.69), TARRANT (11.95), TAYLOR (14.63), TERRELL (53.26), TERRY (39.29), TOM GREEN (25.90), TRAVIS (21.11), UPTON (37.46), UVALDE (60.43), VAL VERDE (70.50), VICTORIA (34.12), WALLER (11.08), WARD (36.83), WEBB (93.87), WHARTON (25.29), WILBARGER (14.45), WILLACY (84.37), WILLIAMSON (14.33), WILSON (35.56), WINKLER (36.77), YOAKUM (36.62), ZAPATA (81.03), ZAVALA (89.42)

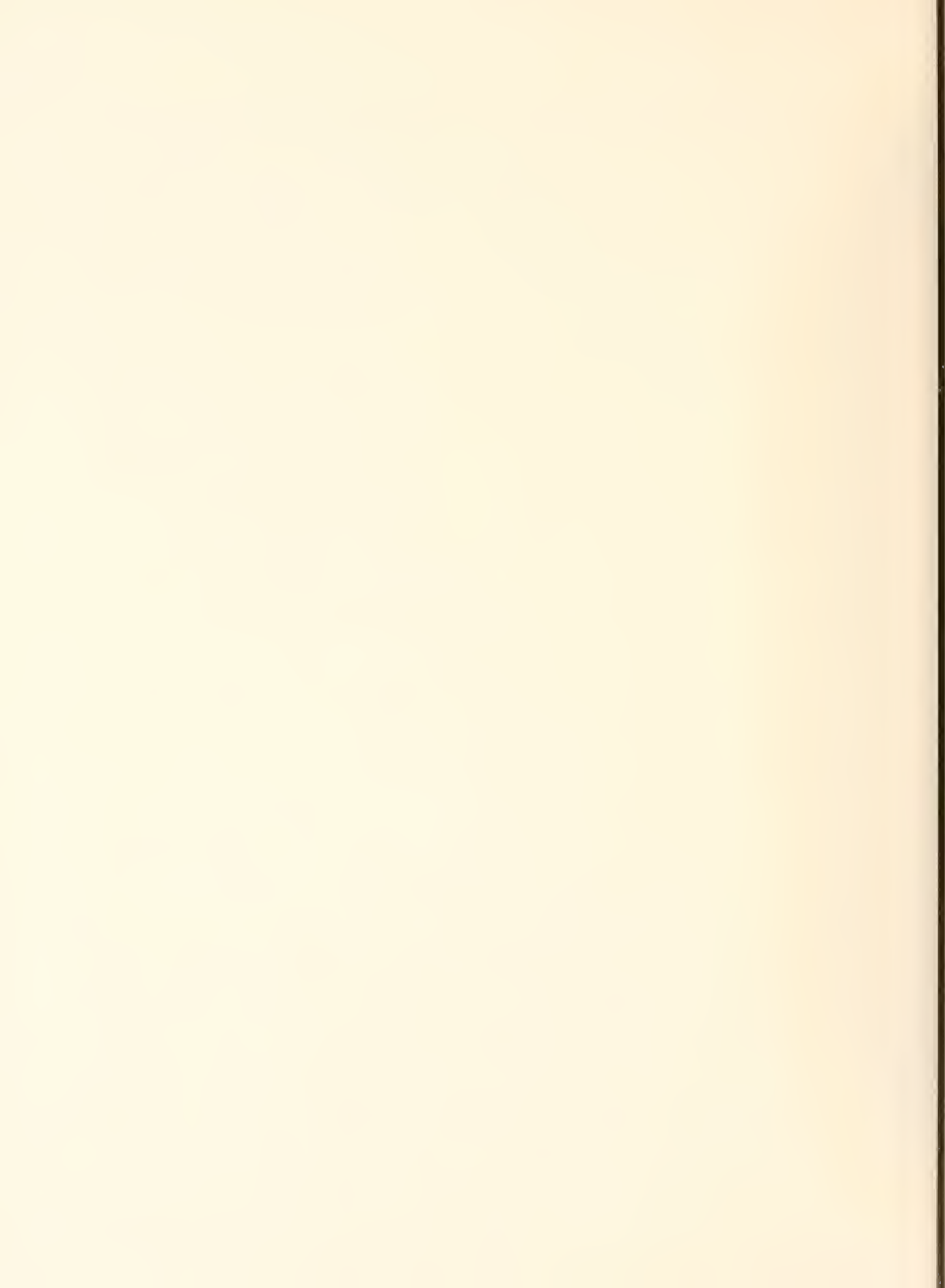
UTAH: CARBON (11.11), TOOELE (11.13)

VIRGINIA: ARLINGTON (13.51)

WASHINGTON: ADAMS (32.84), COLUMBIA (11.51), FRANKLIN (30.20), GRANT (17.22), YAKIMA (23.89)

WYOMING: CARBON (13.90)

Source: U.S. Bureau of the Census, 1990.



B LIFE EXPECTANCY

Life expectancy is a hypothetical measure that is based on existing, age-specific mortality rates. It is defined as the average number of years an individual is expected to live if current mortality trends continue. It is calculated on the basis of a life table which is based on age-specific mortality rates. Life expectancy can be estimated for a cohort of people at birth or for a group of people at a given age such as age 45 years or age 65 years. Life expectancy at birth represents the mortality experience of all the age groups in a population. In terms of evaluating the effect of chronic disease on a population, life expectancy at age 45 years and at age 65 years are more useful measures than life expectancy at birth because life expectancy at birth reflects infant mortality rates. Estimates of life expectancy presented in this book are taken from published materials.

AFRICAN-AMERICANS

Life expectancy at birth and at age 45 years come from abridged life tables prepared by the National Center for Health Statistics (NCHS). These life expectancies summarize the mortality experience of African-Americans in 1989 and can be interpreted as the average number of years of life remaining at birth and at any specified age under the prevailing age-specific mortality rates.

The values reported in this book come from NCHS's *Vital Statistics of the United States: 1989* and *Statistical Bulletin* Vol. 73 no. 3 Jul-Sep

1992 and are based on a complete count of all reported deaths for that year.

Official annual life tables have been prepared since 1945. These tables are based on deaths that occurred during the calendar year and on midyear postcensal population estimates provided by the Bureau of the Census. Life tables have been calculated for African-Americans since 1960. The methodology developed over the past 45 years permits the preparation of abridged life tables that provide reasonably accurate information on trends in expectation of life and survivorship.

For more information on the methodology used by NCHS and on other values in the life table see *Vital Statistics of the United States 1988 and 1989; Volume II—Mortality Part A*.

AMERICAN INDIANS AND ALASKA NATIVES

Life expectancy at birth for a particular year is calculated by the Indian Health Service (IHS) and is based on the average mortality experience over a 3-year period. Life expectancy for 1987, for example, is based on mortality rates from 1986 through 1988. Rates are calculated using figures from the decennial census that is nearest to the 3-year period specified.

Information on deaths among people identified as American Indian or Alaska Native on the death certificate is provided to IHS by the National Center for Health Statistics. Under-reporting of Indian race on the certificates has

led to underestimation of American Indian mortality rates and corresponding overestimation of life expectancy.¹

Discrepancies in life expectancy among various IHS publications are due to the use of different populations. For example, the publication, *Regional Differences in Indian Health, 1991* used vital events and population data from American Indians and Alaska Natives who are residents in the counties that comprise the IHS service areas. In contrast, *Trends in Indian Health, 1992* used statewide data from all Reservation States for 1960 and later. Before 1960, it used data from all of the continental United States.

ASIANS AND PACIFIC ISLANDERS

The 1979 through 1981 estimates were taken from unpublished report submitted to the DHHS Task Force on Minority Health by Duke University Demographic Studies Center.² The 1980 life expectancies at birth, at age 45 years, and at age 65 years for residents of Hawaii come from *Life Tables by Ethnic Group for Hawaii*, written by Robert W. Gardner and prepared for the Hawaii State Department of Health. Life expectancies came from abridged life tables based upon deaths obtained from Hawaii vital records and on population estimates provided by the Health Surveillance Program of the Hawaii Department of Health. Because Hawaii is a small state with relatively few deaths, which produce irregular fluctuations over short periods of time, death data were used for a 3-year period centered on the April 1, 1980 census; the totals were then divided by 3.5 to obtain an average annual number of deaths for each age-sex-ethnicity group studied. The 10-year age groupings, rather than 5-year groupings, were used in the computation to reduce the problem of fluctuation attributable to small numbers.

HISPANIC AMERICANS

Because national estimates of life expectancy for Hispanics were not available, estimates from Texas and Puerto Rico were used in this book. The National Center for Health Statistics will publish Decennial Life Tables for the Hispanic population for a 3-year average for 1989 through 1991 in 1995 (NCHS, personal communications, Jeffrey D. Mauer, MS, 1994).

The life expectancies for the region of Puerto Rico were provided by the Department of Health in San Juan, Puerto Rico.³ The life expectancies statistics for the state of Texas were provided by the Texas Bureau of Vital Statistics and derived from intercensal population estimates. Estimates of life expectancy for Hispanic Americans living in Texas can be constructed from 1970 to the present time. The method of constructing the life tables to estimate life expectancy is provided in the technical appendix of *Texas Vital Statistics, 1992*.⁴

REFERENCES

¹Indian Health Service. Regional differences in Indian Health, 1991. Rockville, MD: Indian Health Service, 1991.

²Duke University Demographic Studies Center. Life Tables for 1979-1981, by ethnicity. Unpublished report submitted to the U.S. Department of Health and Human Services Taskforce on Minority Health, 1984.

³Departamento de Salud, Administracion de Facilidades de salud, Oficina de estadisticas de salud. San Juan, Puerto Rico: Vital Statistics, 1991.

⁴Texas Vital Statistics 1992 Annual Report. Statistical Services Division, Bureau of Vital Statistics, Texas Department of Health, 1993. Statistics, 1993.

C MORTALITY DATA

Data on deaths by cause, race, sex, and age come from the 1990 Public Use Data file prepared by the National Center for Health Statistics (NCHS). Through the National Vital Statistics System, NCHS collects and publishes data on deaths in the United States. The Division of Vital Statistics obtains information on deaths from the registration offices of all states, New York City, and the District of Columbia.

Information on race is available for all states. In 1990, information on deaths of Hispanic Americans was available in 45 states and the District of Columbia. The 1990 reporting area included an estimated 88 percent of the U.S. Hispanic population.¹ Because mortality data on the Hispanic population was incomplete, mortality rates were presented for Hispanics and non-Hispanics without including a breakdown of the Hispanic population by race.

Deaths are classified according to one underlying condition. The classification is based on information reported on the death certificate and uses the international rules for selecting the underlying cause of death from the reported conditions. The *International Classification of Diseases, 9th Revision (ICD-9)*² was used for coding the 1990 mortality data (Table C.1).

The death rates were obtained by dividing the number of deaths in a population for a particular disease or condition by the resident population at midyear. For Hispanic Americans, the resident population was limited to the 45

states and the District of Columbia that supplied death data by Hispanic ethnicity in 1990.

The age-adjusted rates found in this section were obtained by summing up weighted age-specific rates; the weights reflect a standard population age distribution for eighteen age groups: 0–4 years, 5–9 years, 10–14 years, 15–19 years, 20–24 years, 25–29 years, 30–34 years, 35–39 years, 40–44 years, 45–49 years, 50–54 years, 55–59 years, 60–64 years, 65–69 years, 70–74 years, 75–79 years, 80–84 years, and 85 years old and older.

Adjusting crude death rates allows for comparison of race and ethnic groups with very different age distributions. However, these rates have validity only within the context of a comparative study and do not reflect the observed risk. The 1980 census total population was used as the standard population in the text and age-adjusted figures for this report. Age-adjusted mortality rates that used the 1980 and the 1940 standard population are included for purposes of comparison (*Tables C.2–C.7*). Additional information on age-adjustment is available elsewhere.³

REFERENCES

- ¹Public Health Service. Health, United States 1992 ;1993. Washington, DC: Government Printing Office; DHHS publication no. (PHS)93-1232:198.

²Public Health Service. The International Classification of Diseases (9th revision); 1989. Washington, DC. Government Printing Office; DHHS publication no. (PHS)89-1260.

³Feinleib M, Zarate AO (eds.). Reconsidering age adjustment procedures: workshop proceedings. Hyattsville, MD: National Center for Health Statistics; 1991. DHHS publication no. (PHS) 92-25492. (Vital and health statistics, series 4, no. 29).

Table C.1—International Classification of Diseases 9th Revision (ICD-9) codes used in calculating mortality rates

Condition	ICD-9 Code
Ischemic heart disease	410–414
Stroke	430–438
Lung cancer	162
Colorectal cancer	153–154
Breast cancer	174*
Cervical cancer	180
Prostate cancer	185
Chronic obstructive lung disease	490–498
Diabetes	250
Cirrhosis	571

*The code does not include breast cancer for men.

Source: Public Health Service. The International Classification of Diseases (9th revision). Washington, DC: Government Printing Office: DHHS publication no. (PHS)89-1260.

Table C.2—Age-adjusted mortality rates* for major chronic diseases as underlying cause of death for women, by race, United States, 1990

Cause	White American	African American	American Indian/ Alaska Native	Asian/ Pacific Islander
Ischemic heart disease	130.2	148.3	74.5	73.7
Stroke	45.8	68.7	31.4	43.7
Lung cancer	34.7	34.2	17.8	16.7
Breast cancer	29.1	33.4	12.1	11.9
Chronic obstructive pulmonary disease	23.9	14.7	14.3	9.1
Colorectal cancer	17.0	22.9	9.7	9.9
Diabetes	14.8	37.1	31.0	11.8
Cirrhosis	6.0	9.4	18.4	3.3
Cervical cancer	1.9	3.0	1.2	0.9

*Rate per 100,000 persons adjusted to the 1980 standard U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

Table C.3—Age-adjusted mortality rates for major chronic diseases as underlying cause of death for men, by race, United States, 1990*

Cause	White American	African American	American Indian/ Alaska Native	Asian/ Pacific Islander
Ischemic heart disease	242.4	228.2	142.5	117.8
Lung cancer	80.8	116.2	42.0	39.3
Stroke	51.8	86.4	36.2	48.3
Chronic obstructive pulmonary disease	47.3	41.3	32.1	24.2
Prostate cancer	28.7	63.9	14.5	13.5
Colorectal cancer	25.8	32.4	11.1	16.1
Diabetes	17.3	33.1	29.2	12.9
Cirrhosis	13.4	21.1	24.6	6.4

*Rate per 100,000 persons adjusted to the 1980 standard U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

Table C.4—Age-adjusted mortality rates for major chronic diseases as underlying cause of death, by Hispanic ethnicity and sex, United States, 1990

Cause	Women		Men	
	Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
Ischemic heart disease	147.1	131.8	225.8	241.2
Stroke	45.4	47.9	49.3	54.5
Lung cancer	20.1	39.9	56.8	83.5
Breast cancer	25.0	29.4	—	—
Chronic obstructive pulmonary disease	15.7	23.3	33.4	47.2
Prostate cancer	—	—	26.0	31.2
Colorectal cancer	15.0	17.5	22.8	26.3
Diabetes	27.6	16.3	28.9	18.1
Cirrhosis	10.4	6.3	28.9	13.4
Cervical cancer	1.6	2.0	—	—

*Rate per 100,000 persons adjusted to the 1980 standard U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

Table C.5—Age-adjusted mortality rates for major chronic diseases as underlying cause of death for women, by race, United States, 1990

Cause	White American	African American	American Indian/ Alaska Native	Asian/ Pacific Islander
Ischemic heart disease	68.7	88.8	12.2	126.8
Lung cancer	25.9	26.4	3.4	43.2
Stroke	23.8	42.8	5.1	84.9
Breast cancer	22.9	27.5	2.5	40.6
Chronic obstructive pulmonary disease	15.2	10.7	2.4	19.2
Colorectal cancer	10.9	15.5	1.7	25.5
Diabetes	9.6	25.4	5.4	40.6
Cirrhosis	4.9	8.7	4.2	9.6
Cervical cancer	1.3	2.0	0.2	3.1

*Rate per 100,000 persons adjusted to the 1940 standard U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

Table C.6—Age-adjusted mortality rates for major chronic diseases as underlying cause of death for men, by race, United States, 1990

Cause	White American	African American	American Indian/ Alaska Native	Asian/ Pacific Islander
Ischemic heart disease	145.3	147.1	23.1	267.8
Lung cancer	56.6	86.2	7.0	103.9
Stroke	27.8	56.1	5.1	109.3
Chronic obstructive pulmonary disease	27.5	26.5	4.6	53.2
Colorectal cancer	16.5	21.6	1.6	41.9
Prostate cancer	15.3	35.3	1.9	28.4
Cirrhosis	11.5	20.0	5.7	21.0
Diabetes	11.3	23.6	5.1	32.6

*Rate per 100,000 persons adjusted to the 1940 standard U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

Table C.7—Age-adjusted mortality rates^a for major chronic diseases as underlying cause of death, by Hispanic ethnicity and sex, United States, 1990

Cause	Women		Men	
	Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
Ischemic heart disease	74.1	70.4	130.6	145.4
Stroke	24.8	25.6	28.9	30.1
Lung cancer	13.6	26.2	37.4	59.1
Breast cancer	19.5	23.3	—	—
Chronic obstructive pulmonary disease	9.2	15.0	18.0	27.7
Colorectal cancer	9.4	11.4	14.2	16.9
Prostate cancer	—	—	13.2	16.8
Diabetes	17.3	10.7	18.7	12.0
Cirrhosis	8.2	5.3	25.3	11.6
Cervical cancer	1.2	1.4	—	—

^aRate per 100,000 persons adjusted to the 1940 standard U.S. population.

Source: CDC, NCHS, National Vital Statistics System, 1990.

D MORBIDITY DATA

The morbidity data presented in this book consist of two parts: prevalence of chronic conditions, and cancer incidence and 5-year relative survival.

PREVALENCE OF CHRONIC CONDITIONS

Data on the self-reported prevalence of the chronic conditions presented in the four minority-specific sections on morbidity come from the National Center Health Statistics's National Health Interview Survey (NHIS). This annual survey collects sociodemographic and health characteristics of the U.S. civilian, noninstitutionalized population. Information is obtained on personal characteristics, illnesses, injuries, impairments, chronic conditions, use of health resources, and other health topics. In this book, NHIS data from 1986 through 1990 formed the core of the sections in each chapter on morbidity and quality of life. A detailed description of the survey design, the methods used in estimation, and general qualifications of the data obtained from the survey is available elsewhere.¹

In brief, NHIS employs a multistage, probability design. In the first stage of sampling, the United States is divided into 1,900 geographically defined primary sampling units (PSUs). Each unit is made up of a county, group of counties, or metropolitan statistical area. From the 1,900, 198 PSUs are selected. For the

second stage of sampling, each PSU is divided into segments of 4-8 households each. Within each segment all occupied households are assigned to interviewers.

The sampling process was designed so that a typical NHIS sample for the years 1985 to 1995 would consist of about 7,500 segments containing about 59,000 assigned households. About 10,000 of these households will be vacant, demolished, or occupied by persons not in the target population of the survey. The expected sample of 49,000 occupied households will yield a probability sample of about 127,000 persons.

Interviewers from the Bureau of the Census conduct the interviews in-person in the home. At the interview, information is collected on all members of the household. All individual results are weighted to correct for the probability of selection, nonresponse, and deviations from the estimated age, sex, and race distribution of the country. Two categories are used to compute the race poststratification weight: black and all other. The weights are included in the public use data file.

To reduce bias from memory loss, questions about health events or conditions are asked in reference to a time period during which the person is likely to remember these events. The occurrence of a restriction in activity, for example, is asked in reference to the preceding two weeks. For the chronic conditions considered in

this book, the reference period is the past 12 months.

Estimates for the individual conditions are obtained from responses from subsets of the surveyed population. NHIS defines a condition as chronic if the respondent indicates it was first noticed more than 3 months before the reference date of the interview or if it is a type of condition that ordinarily has a duration of more than 3 months. The NHIS derives some condition categories from a combination of survey items.² The International Classification of Disease (9th Revision) (ICD-9) codes are assigned to the conditions.³

Prevalence estimates from the NHIS tend to be underestimates for several reasons. Respondents may not have been told that they have a particular condition or may not recall it or may not wish to divulge the information. The sample also does not include people who died or became institutionalized during the reference period. This last factor may be especially significant for chronic diseases among the elderly.

Additional error is introduced because the sample is by chance alone and not likely to be exactly representative of the entire population. The chances of the sample estimate differing from the population by a specific amount is expressed in terms of the standard error. The chances are 95 percent that this difference is less than twice the standard error. In general, the smaller the sample, the larger the standard error. The larger the standard error as a percentage of an estimate, the less reliable the estimate.

DESCRIPTION OF ANALYSES

The study population for the race-specific analyses included respondents who had identified their main racial background as Aleut, Eskimo, or American Indian, Asian or Pacific Islander, black, or white. Respondents who

reported other, multiple race, or unknown were excluded from these analyses. A separate data set was created for the analyses involving the Hispanic population because of the number of respondents who reported that they did not know whether their ancestors were Hispanic in origin.

The sample sizes for the specific groups were 443,763 for whites, 83,430 for African-Americans, 12,179 for Asian and Pacific Islanders, and 4,409 for American Indians and Alaska Natives. Hispanics of all races numbered 44,638. Sample sizes and response rates for each year from 1986 through 1990 were comparable. With the exception of the African-American sample, the male:female distribution was about 47 percent male and 53 percent female for the samples of white Americans and the minority groups. About 44 percent of the sample of African-Americans was male and about 56 percent was female.

Prevalence estimates for the chronic conditions included in this document—diabetes, ischemic heart disease (IHD), hypertension, stroke, asthma, chronic bronchitis, emphysema, and liver diseases, including cirrhosis—are presented as conditions per 100,000 persons and are based on data combined from 5 survey years, 1986 through 1990, to increase the reliability of the estimate for the minority populations. The specific ICD-9 codes that were included by the NHIS are shown in *Table D.1*.

SUDAAN, a procedure for analyzing complex sample-survey data, was used to calculate the weighted prevalence estimates and their standard errors.⁴ We did not present prevalence estimates with standard errors more than 30 percent of the estimate because they did not meet the NHIS standards of statistical reliability.¹ The age-adjusted estimates were adjusted to the 1980 U.S. standard population.

CANCER INCIDENCE AND SURVIVAL

In this book, most of the estimates on cancer incidence and relative survival are taken from *Health, United States, 1990*, which summarizes data from the Surveillance, Epidemiology, and End Results (SEER) Program—a program sponsored by the National Cancer Institute.⁵ The institute contracts with 11 population-based registries throughout the United States and Puerto Rico to provide data on all residents diagnosed with cancer during the year and to provide follow-up information on all previously diagnosed patients. The incidence data in this report are for 1977 through 1983 and have been age-adjusted by the direct method to the 1970 U.S. total population. The 5-year relative survival rates are based on cases diagnosed between 1975 and 1984.

The data are not national estimates. Data for each of the populations comes from a subset of the 11 SEER registry areas. For African-Americans, the data come from four registry areas: the metropolitan areas of San Francisco-Oakland, Atlanta, Detroit, and the state of Connecticut. For American Indians, the data come from New Mexico and Arizona. Data from the registries in San Francisco-Oakland and Hawaii are used for estimates for Chinese, Japanese, and Filipinos. Data on white Americans in the respective registry area are used for comparisons. Mexican Americans were the only Hispanics identified in these SEER data; these data and data on non-

Hispanic whites come from the New Mexico registry.

The ICD-9 codes used in the section on cancer in *Health, United States, 1990* are as follows: lung and bronchus cancer (160-165), colorectal cancer (153-154), breast cancer (174, 175), and prostate cancer (185).

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²Public Health Service. Public Use Data Tape Documentation. Part 1: Tape Formats. National Health Interview Survey, 1990. Hyattsville, MD: National Center for Health Statistics; 1991.

³Public Health Service. The International Classification of Diseases (9th revision). Washington, DC: Government Printing Office; 1989; DHHS publication no. (PHS)89-1260.

⁴Research Triangle Institute. SUDAAN: Professional Software for Survey Data Analysis. Research Triangle Park, NC: Research Triangle Institute, 1989.

⁵National Center for Health Statistics. *Health, United States, 1990*. Hyattsville, MD: National Center for Health Statistics; 1991. DHHS publication no. (PHS) 91-1232:18-23,38,42.

Table D.1—The International Classification of Disease 9th Revision (ICD-9) condition codes as modified by the National Health Interview Survey (NHIS)

Condition	ICD-9 inclusions as modified* by the NHIS
Liver diseases, including cirrhosis	571, 572, 573.0,3-9
Diabetes	250
Ischemic heart disease	413, 414 (NHIS includes 410-412 and 429.6 in 414)
High blood pressure (hypertension)	401-405
Cerebrovascular disease (stroke)	430-435, 437 (NHIS includes 436 and 438 in 437)
Chronic bronchitis	490, 491
Asthma	493
Emphysema	492

*Modifications by the NHIS are in parentheses.

Source: Public Health Service. Public Use Data Tape Documentation. Part 1: Tape Formats. National Health Interview Survey, 1990. Hyattsville, MD: National Center for Health Statistics; 1991;157-166.

E DATA ON HEALTH-RELATED QUALITY OF LIFE

BACKGROUND

Two health-related quality of life variables are examined in this section: fair or poor health and limitation of activity because of chronic conditions. These indicators are derived from survey items in the National Health Interview Survey (NHIS) survey described in Appendix D.

Fair or poor health. NHIS refers to the results as respondent-assessed health status rather than self-reported health status because proxy reports are accepted.

Survey item. Would you say ____ health in general is excellent, very good, good, fair, or poor?

The five response categories were collapsed into dichotomous categories for the analyses used in this book: fair or poor health and other (i.e., excellent, very good, or good).

Limited in major activity because of chronic conditions. The variable is a summary variable coded by NHIS and based on the answers to several questions on limitation of activity and on chronic conditions. Persons are not classified as limited in activity unless one or more chronic conditions are reported as the cause of the activity limitation.

According to the description in *Current Estimates from the National Health Interview Survey, 1990*,¹ persons are classified in terms of the major activity usually associated with their

particular age group. The major activities for the age groups are (a) ordinary play for children under 5 years old, (b) attending school for those aged 5–17 years, (c) working or keeping house for persons aged 18–69 years and for those aged 70 years and older, and (d) the capacity for independent living (e.g., the ability to bathe, shop, dress, and eat without needing the help of another person). People aged 18–69 years who are classified as keeping house are also classified by their ability to work at a job or business. In regard to these activities, each person is classified into one of four categories:

- (a) Unable to perform the major activity.
- (b) Able to perform the major activity but limited in the kind or amount of this activity.
- (c) Not limited in the major activity but limited in the kind or amount of other activities.
- (d) Not limited in any way.

In regard to these four categories, NHIS publications often classify persons only by whether they are limited (a–c) or not limited (d).

As defined by the NHIS, a condition is a general term that includes a specific illness, injury, or impairment. Conditions are derived from the survey in two ways. First, respondents are asked to identify any conditions that caused certain types of impact associated with health,

such as a visit to a doctor or a day spent in bed. Second, respondents are read lists of selected chronic conditions and asked whether they have any of these conditions. As defined by the NHIS, a condition is considered chronic if the respondent indicates it was first noticed more than 3 months before the reference date of the interview or if it is a type of condition that ordinarily has a duration of more than 3 months. For the analyses in this book, the variable for limitation of activity because of chronic conditions consisted of two categories—limited and not limited.

Sex- and minority-specific analyses were conducted for both health-related quality of life

variables for the total sample, for a subsample of the respondents who reported having one or more of the eight chronic conditions examined in the NHIS morbidity analyses, and for the subsample of the total group who reported that they had hypertension.

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F BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (BRFSS)

BACKGROUND

From 1981 through 1983, 29 state health departments used random-digit dialing to conduct statewide point-in-time behavioral risk factor surveys. In 1984, the Behavioral Risk Factor Surveillance System (BRFSS) became a monthly surveillance system administered in 15 states through cooperative agreements with the Centers for Disease Control (CDC). Since 1984, the number of participating states has increased steadily each year. In 1993, 49 states (Wyoming did not participate) and the District of Columbia participated in the BRFSS. By 1995, CDC projects that 50 states and the District of Columbia will be collecting BRFSS data. This report uses 1991 and 1992 data because they were the most recently available at the time of analysis.

TARGET POPULATION

To increase the precision of the prevalence estimates, sample data for 1991 and 1992 were combined so that 49 states (excluding Wyoming) and the District of Columbia contributed data for this analysis. The analysis was confined to data from states that conducted monthly surveillance. In 1991, 47 states (excluding Kansas, Nevada, and Wyoming) and the District of Columbia met the selection criterion. In 1992, 48 states (excluding Arkansas and Wyoming) and the District of Columbia met the selection criterion.

Thus, the target population, or the entire set of individuals to which findings of this special analysis are to be extrapolated, consisted of persons aged 18 years or older who lived in households with one or more telephones in all states (except Wyoming) and the District of Columbia in 1991 or 1992. Because each contributed only one year of data, Arkansas, Kansas, and Nevada were undersampled in the 2-year analysis dataset; Wyoming, which contributed no data, was not represented in the target population.

SAMPLE DESIGN

Using random-digit-dialing telephone survey techniques, each state selects a probability sample of its noninstitutionalized adult population (greater than or equal to 18 years of age) with telephones. In 1991 and 1992, 38 and 39 states, respectively, used a multistage cluster-sampling design based on the Waksberg method.¹ To meet individual needs, other states have chosen to use different sampling methods, such as simple random or stratified sample designs. Each state's monthly sample is selected to be representative of the state-wide target population and the monthly samples are additive over time.²

DATA COLLECTION

All adults (18+ years old) living in each contacted household are listed, and one respondent per

household is selected at random using a standard procedure. The interviewing instrument consists of three parts: a series of core questions asked by all states, standardized modules of questions on selected topics that are developed by CDC and added at the discretion of each state, and questions developed and administered by a particular state to meet its own needs. Whenever feasible, questions used in national surveys, such as the National Health and Nutrition Examination Surveys (NHANES) and the National Health Interview Survey (NHIS), have been adopted. When the interviewing cycle is completed each month, the data are sent to CDC for editing. In 1991 and 1992, 36 states used a computer-assisted telephone interviewing (CATI) system that permitted direct entry of data into a computer file. CATI facilitates interviewer monitoring, data coding and entry, and quality-control procedures.²

SAMPLE SIZE

Of the combined 1991 and 1992 sample of 184,059 respondents available for analysis, 1,033 (0.56%) and 3,382 (1.83%) were excluded because of missing age and race, respectively. Analyses were conducted on 180,255 observations from 46 states and the District of Columbia, each of which contributed two years of data (range of sample sizes per year: 1,168 to 3,397 respondents); and three states each of which contributed one year of data (range of sample sizes: 1,313 to 1,565) (see *Tables F1 and F2* for state-specific sample sizes by race and by Hispanic ethnicity). State-specific response rates, which were computed using the formula developed by the Council of American Survey Research Organizations (CASRO), ranged from 37.7 to 83.7 percent (median = 70.8) in 1991 and from 17.9 to 86.6 percent (median = 70.4) in 1992.

QUESTIONS AND DEFINITIONS

Because questionnaire responses from data years 1991 and 1992 were to be combined, the analysis was confined to core questions, with identical wording in the two years. However, in some sections of the questionnaire (for example Women's Health), the wording of the questions did not change, but the lead-in—the introduction to a series of questions—or text to be read by the interviewer to clarify the context or meaning of a question may have changed between the years. For example, in 1991, the lead-in to the questions on mammography described a mammogram as “an x-ray test of the breast to look for cancer”; in 1992, a mammogram was described as “an x-ray of the breast and involves pressing the breast between two plastic plates”. The contribution of such questionnaire changes to the measurement error inherent in the estimates could not be determined. The risk factors, the full text of each survey item, and the definition of created variables used for this report are as follows:

Demographics

Age: “How old were you on your last birthday?”

Race: “What is your race? Would you say: white; black; Asian, Pacific Islander; Aleutian, Eskimo, or American Indian; or other: (specify)?”

Ethnicity: “Are you Hispanic origin such as Mexican American, Latin American, Puerto Rican, or Cuban?”

Income: “Which of the following categories best describes your annual household income from all sources?”

Education: “What is the highest grade or year of school you completed?”

Sex: Interviewer indicates sex of respondent (or asks if necessary).

Risk factors

Cigarette smoking

1. "Have you smoked at least 100 cigarettes in your entire life?"
2. "Do you smoke cigarettes now?"
3. "On the average, about how many cigarettes a day do you now smoke?"

Cigarette smoking = ever smoked 100 cigarettes and currently smoke regularly.

Exercise

"The next few questions are about exercise, recreation, or physical activity other than your regular job duties."

1. "During the past month, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?"
2. "How many times per week or month did you take part in this activity during the past month?"
3. "And when you took part in this activity, for how many minutes or hours did you usually keep at it?"

No leisure-time physical activity = no physical activity outside of activity on a job.

Sedentary lifestyle = no physical activity or physical activity or a pair of activities that were done for 20 minutes or less, fewer than three times per week during the previous month.

Alcohol consumption

1. "Have you had any beer, wine, wine coolers, cocktails, or liquor during the past month, that is, since _____?"
2. "During the past month, how many days per week or month did you drink any alcoholic beverages, on the average?"

3. "A drink is one can or bottle of beer, one glass of wine, one can or bottle of wine cooler, one cocktail, or one shot of liquor. On the days when you drank, about how many drinks did you drink on the average?"
4. "Considering all types of alcoholic beverages, that is beer, wine, wine coolers, cocktails, and liquor, as drinks, how many times during the past month did you have five or more drinks on an occasion?"

Chronic drinking = 60 or more drinks of alcohol during the past month.

Binge drinking = consumption of five or more alcoholic beverages on at least one occasion during the past month.

Overweight and Weight Control

1. "About how much do you weigh without shoes?"
2. "About how tall are you without shoes?"
3. "Are you now trying to lose weight?"
4. "Are you eating fewer calories to lose weight?"
5. "Have you increased your physical activity to lose weight?"

Overweight = body mass index ≥ 27.8 for men and ≥ 27.3 for women (Body mass index = weight in kilograms divided by height in meters squared ($BMI = kg/(m)^2$)).

High cholesterol

1. "Have you ever been told by a doctor or health professional that your blood cholesterol is high?"

Preventive Health Practices

Quit smoking for at least one day during the preceding year:

1. Asked of current cigarette smokers:
"During the past 12 months, have you quit smoking for one day or longer?"

Blood pressure measured within the last two years:

1. "About how long has it been since you last had your blood pressure taken by a doctor, nurse, or other health professional?"

Cholesterol checked within the last five years:

1. "About how long has it been since you last had your blood cholesterol checked?"

Screening for breast cancer and cervical cancer:

1. "Have you ever had a mammogram?"
2. "About how long has it been since you had your last mammogram?"
3. "Have you ever had a breast physical exam by a doctor or a medical assistant?"
4. "About how long has it been since your last breast physical exam?"
5. "Have you ever had a Pap smear?"
6. "When did you have your last pap smear?"
7. "Have you had a hysterectomy?"

Estimates of Pap smear utilization are restricted to women who did not have a hysterectomy.

Access to Preventive Services and Health Insurance

1. "About how long has it been since you last visited a doctor for a routine checkup?"

"These next questions are about health care plans which include health insurance, prepaid plans such as HMOs (health maintenance organizations), or government plans such as Medicare.

2. "Do you have any kind of health care plan?"
3. "When you are not sick, does your health care plan cover all, most, some, or none of your checkups or other preventive services?"
4. "Was there a time during the last 12 months when you needed to see a doctor, but could not due to cost?"

ESTIMATION PROCEDURES

Weighting. Estimates of the proportion of the target population that possessed a particular risk factor or other characteristic were computed by methods appropriate for complex multistage probability samples. Those estimates were based on 1991 and 1992 sample person counts appropriately weighted.

Because each state selects a sample from a state-specific sampling frame each data year, a sample weight is computed separately for each sample person from that state for that data year. This sample weight may be interpreted as the number of population members in the specific state whom the respondent represents.

The sample weight adjusts for: (a) the number of telephone numbers per household; (b) the number of persons 18 years or older in the household; (c) the number of interviews completed per cluster (or primary sampling unit)—a group of telephone numbers drawn from a bank of 100 telephone numbers which have the same area code, prefix, and first two digits of the suffix; and (d) the age, race, and sex distribution of the state population. Items (a), (b), and (c) are used together to compute the respondent's probability of being selected into the sample, the basic component of the overall weight. For example, a respondent in a one-adult household has four times the chance of being selected for an interview as does an adult in a four-adult household. A household with

two telephone numbers has twice the chance of being dialed as a household with one telephone number. If three interviews per primary sampling unit (cluster) are not completed, the weight is adjusted to reflect the missing ones. Item (d) is a poststratification adjustment to the basic weight to ensure that the target population, which the sample represents, has the same age, race, and sex distribution as the 1990 census enumerated state population. For the poststratification adjustment, the state population is cross-classified into six age groups (18–24 years, 25–34 years, 35–44 years, 45–54 years, 55–64 years, 65+ years), two race groups (white and other race) and two sex groups (male and female).^{3,4} In addition to its numerical function (indicating the number of persons in the target population represented by each sample person), the overall weight also (a) adjusts for bias (or error) in the unweighted estimate because each respondent in the sample was selected with unequal probability, each person in the target population was not reachable by telephone, and some persons reached by phone did not answer any questions; and (b) reduces sampling error, the variations in the estimate that may occur by chance because only a sample of the population was surveyed.

Combining states and data years. To obtain a larger sample that yielded more precise (lower sampling error) risk factor estimates among racial and ethnic minority groups, data from all participating states and two data years (1991 and 1992) were combined. However, the validity (bias-free status) of the resulting state-aggregate estimates is predicated on the following assumptions: (a) the sum of state samples for 1991 and 1992 is a multistage cluster sample of the sum of state sampling frames (and by inference the sum of state target populations); (b) any changes in the lead-in questions between 1991 and 1992 did not alter

the meaning among respondents; and (c) state-specific and state-aggregate estimates did not change substantially between 1991 and 1992. The accuracy of these assumptions was not verified.

RELIABILITY OF THE ESTIMATES

Standard errors. The standard error of the percentage of persons with a particular risk factor was used as a measure of sampling error inherent to the estimate. The estimate is subject to sampling error because it was derived from a sample rather than from a complete population census of persons with that risk factor. The sample point estimate (percent with a risk factor) and its standard error are used to (a) compute interval estimates (confidence interval) which give a range of values that would include, with known probability, the results of all possible samples, like the one that yielded the point estimate; and (b) test statistical hypotheses that two or more percentages are not significantly different.⁵ SUDAAN, a procedure for analyzing complex sample-survey data, was used to calculate the standard errors for the prevalence estimates.⁶

Minimum standards of statistical stability. We decided not to report survey estimates which were based on less than 50 sample responses.

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Table F.1—Sample size, by race, sex, and state, Behavioral Risk Factor Surveillance System, 1991–1992

	Total	White American		African-American		Asian/Pacific Islander		American Indian/Alaska Native	
		Male	Female	Male	Female	Male	Female	Male	Female
State:	N	N	N	N	N	N	N	N	N
Alabama	4095	1332	1847	306	579	7	6	13	5
Alaska	3009	1142	1170	14	21	22	51	272	317
Arizona	3286	1251	1792	83	60	14	14	37	35
Arkansas	1313	483	679	53	86	2	1	6	3
California	6473	2494	3010	208	288	209	206	28	30
Colorado	3358	1331	1818	63	85	16	22	10	13
Connecticut	3474	1306	1903	88	130	17	9	7	14
Delaware	2990	1027	1490	153	282	7	21	6	4
District of Columbia	2882	449	500	646	1235	25	25	—	2
Florida	4897	1810	2519	163	341	17	24	13	10
Georgia	3733	1304	1553	319	536	8	9	3	1
Hawaii	3760	720	780	30	34	958	1232	3	3
Idaho	3499	1484	1933	11	10	8	19	18	16
Illinois	4010	1465	1943	174	348	37	39	3	1
Indiana	4458	1742	2327	122	232	4	17	5	9
Iowa	3206	1370	1774	15	28	8	9	1	1
Kansas	1419	611	746	24	19	4	4	5	6
Kentucky	4076	1482	2302	87	183	9	10	2	1
Louisiana	3282	1020	1426	269	540	10	11	4	2
Maine	2513	1075	1413	6	4	2	5	5	3
Maryland	3848	1208	1681	302	553	38	64	1	1
Massachusetts	2839	1171	1492	45	74	30	20	2	5
Michigan	4689	1739	2332	191	346	20	18	21	22

Table F.1—Sample size, by race, sex, and state, Behavioral Risk Factor Surveillance System, 1991–1992 (cont.)

Minnesota	6794	2862	3677	47	88	32	32	24	32
Mississippi	3115	837	1355	302	610	3	3	5	—
Missouri	2996	1123	1598	86	160	15	8	1	5
Montana	2355	992	1295	3	2	4	5	22	32
Nebraska	2942	1197	1638	29	49	11	7	7	4
Nevada	1565	558	869	35	53	14	20	6	10
New Hampshire	2949	1323	1585	7	9	9	7	4	5
New Jersey	2883	979	1635	75	122	27	41	1	3
New Mexico	2336	946	1246	50	26	6	7	27	28
New York	4161	1505	1949	214	354	58	62	5	14
North Carolina	3990	1374	1802	286	485	7	6	13	17
North Dakota	3587	1557	1934	9	8	4	3	27	45
Ohio	2594	1037	1292	96	139	11	12	3	4
Oklahoma	2958	1054	1606	55	117	7	3	41	75
Oregon	6617	2741	3645	22	25	37	50	43	54
Pennsylvania	4796	1958	2462	117	213	15	18	5	8
Rhode Island	3544	1466	1914	43	76	15	15	9	6
South Carolina	3937	1273	1768	293	583	8	5	3	4
South Dakota	3560	1442	2004	7	6	5	8	39	49
Tennessee	5333	1918	2631	265	475	16	18	3	7
Texas	3576	1257	1834	154	277	19	23	6	6
Utah	3556	1479	1989	10	10	21	27	8	12
Vermont	3361	1434	1903	2	—	4	5	6	7
Virginia	3492	1288	1608	192	343	24	29	6	2
Washington	4573	1867	2416	58	47	58	61	30	36
West Virginia	4796	1742	2873	49	111	7	5	3	6
Wisconsin	2780	1219	1411	35	63	12	16	10	14
Totals	180255	67444	90369	5913	10465	1921	2332	822	989

Table F.2—Sample size, by Hispanic ethnicity, sex, and state, Behavioral Risk Factor Surveillance System, 1991-1992

	Hispanic			Non-Hispanic		Do not know		Refused	
	Total	Male	Female	Male	Female	Male	Female	Male	Female
State:	N	N	N	N	N	N	N	N	N
Alabama	4095	16	33	1642	2403	—	1	—	—
Alaska	3009	32	28	1411	1527	7	4	—	—
Arizona	3286	197	311	1187	1588	1	1	—	1
Arkansas	1313	12	22	529	746	3	1	—	—
California	6473	461	558	2474	2972	4	3	—	1
Colorado	3358	45	66	1375	1872	—	—	—	—
Connecticut	3474	45	37	1373	2019	—	—	—	—
Delaware	299	25	35	1168	1761	—	1	—	—
District of Columbia	2882	25	44	1093	1717	2	—	—	1
Florida	4897	239	314	1763	2579	1	1	—	—
Georgia	3733	28	28	1605	2071	1	—	—	—
Hawaii	3760	101	145	1606	1897	4	4	—	3
Idaho	3499	23	36	1495	1941	1	—	2	1
Illinois	4010	52	64	1627	2267	—	—	—	—
Indiana	4458	32	28	1841	2555	—	2	—	—
Iowa	3206	16	19	1371	1793	3	—	4	—
Kansas	1419	8	14	635	760	1	1	—	—
Kentucky	4076	12	20	1567	2476	1	—	—	—
Louisiana	3282	50	52	1252	1917	—	10	1	—
Maine	2513	12	26	1076	1396	—	2	—	1
Maryland	3848	29	52	1520	2247	—	—	—	—
Massachusetts	2839	29	44	1218	1542	—	5	1	—
Michigan	4689	41	57	1922	2655	4	2	4	4

Table F.2—Sample size, by Hispanic ethnicity, sex, and state, Behavioral Risk Factor Surveillance System, 1991–1992 (cont.)

Minnesota	6794	31	37	2933	3788	—	2	1	2
Mississippi	3115	25	43	1116	1919	6	6	—	—
Missouri	2996	11	22	1211	1747	2	2	1	—
Montana	2355	9	17	1010	1317	2	—	—	—
Nebraska	2942	16	20	1228	1678	—	—	—	—
Nevada	1565	24	33	588	917	—	1	1	1
New Hampshire	2949	28	31	1314	1568	1	6	—	1
New Jersey	2883	65	83	1015	1714	—	4	2	—
New Mexico	2336	348	466	680	839	1	2	—	—
New York	4161	136	237	1646	2142	—	—	—	—
North Carolina	3990	14	20	1666	2287	—	3	—	—
North Dakota	3587	15	28	1582	1961	—	1	—	—
Ohio	2594	16	18	1129	1426	2	3	—	—
Oklahoma	2958	14	23	1141	1776	2	2	—	—
Oregon	6617	87	99	2751	3668	4	7	1	—
Pennsylvania	4796	21	51	2070	2645	3	4	1	1
Rhode Island	3544	28	40	1503	1969	2	1	—	1
South Carolina	3937	23	41	1547	2309	7	9	—	1
South Dakota	3560	9	20	1482	2046	1	1	1	—
Tennessee	5333	16	19	2185	3109	1	2	—	1
Texas	3576	155	269	1279	1867	2	4	—	—
Utah	3556	161	197	1357	1840	—	—	—	1
Vermont	3361	16	23	1428	1891	2	1	—	—
Virginia	3492	35	38	1471	1940	4	3	—	1
Washington	4573	48	70	1961	2483	1	5	3	2
West Virginia	4796	31	70	1769	2925	1	—	—	—
Wisconsin	2780	17	15	1258	1485	1	4	—	—
Totals	180255	2929	4063	73070	99957	78	111	23	24

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